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## ABSTRACT

Previous studies have shown considerable differences at both the population and individual levels in the timing of menopause and the experience of physical and emotional changes related to menopause (generally called symptoms). Attempts to understand this variation have not found a consistent pattern, suggesting that the existing approaches to the study of menopause may have failed to capture some of the complexity of the phenomenon. Previous research on British Pakistanis has not included in-depth study of menopause. The present study has sought to demonstrate that a biosocial research design can improve our understanding of the menopause transition both among British Pakistanis and more generally. This study used a range of methods including semi-structured questionnaire-based interviews and anthropometrics (n=257), life history interviews (n=19), and daily participant observation among middle-aged British Pakistani women in the Leeds/Bradford area of West Yorkshire. Statistical procedures were used on the quantitative data using SPSS 15; qualitative data were analysed using a thematic coding system and NVivo software.

This study found that British Pakistani women of a higher occupational social class were more likely to experience hot flushes than women from lower social classes and women who perceive themselves to be of higher status were more likely to have an earlier menopause than their lower status counterparts. Women from the *Choudhary Jatt biradari* (a caste-related kinship group) were more likely to have a later menopause and were less likely to experience hot flushes than women from other *biradaris*. Levels of reported anxiety and acculturation were both positively associated with hot flush severity. Women reported a wide range of changes due to menopause and attributed changes to menopause that previous researchers considered to be unrelated to menopause. Attribution of symptoms to menopause was associated with menopausal status, age, and migration status. Women interpreted some items from a standard checklist in ways other than intended by the checklist's developers, based on local ideas about menopause. British Pakistani women's understandings and perceptions of menopause are intimately linked with their understandings of Islam, sexuality, menstruation, and ageing, as well as their ethnic identity and notions of purity and modesty. Social issues like acculturation, social support, kinship networks, class, and the history of tensions between Pakistanis and the wider society appear to be very important to consider in understanding menopause among British Pakistani women. Social issues such as these may play a role in influencing both the timing and the experience of menopause among women in other groups and thus should be considered in future studies.

The Timing and Experience of Menopause among British Pakistani Women in  
Bradford and Leeds, West Yorkshire, UK

Mwenz T. Blell

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## TABLE OF CONTENTS

ABSTRACT.....	i
TITLE PAGE.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	vi
DECLARATION.....	vii
STATEMENT OF COPYRIGHT.....	vii
ACKNOWLEDGEMENTS.....	viii
PREFACE.....	1
CHAPTER ONE – REVIEW OF PREVIOUS RESEARCH ON MENOPAUSE.....	4
Introduction.....	4
What Causes Menopause?.....	4
Why is there a menopause?.....	5
Previous Research on Menopause.....	8
Variation in Timing of Menopause.....	8
Intra-population Variation in Symptom Experience.....	15
Research on Menopausal Symptoms among South Asians.....	18
Research on Attitudes and Beliefs Regarding Menopause.....	20
Conclusion.....	27
CHAPTER TWO: REVIEW OF THE ETHNOGRAPHIC LITERATURE ON BRITISH PAKISTANIS.....	28
<i>Biradari</i> , Marriage, and Kinship.....	29
Women’s Roles, Modesty, and Isolation.....	32
The Body: Reproduction, Health, and Hygiene.....	36
Issues of Identity.....	37
Racism.....	42
Conclusion.....	45
CHAPTER THREE: METHODS.....	47
A Biosocial Perspective, Epistemological, and Ontological Approaches.....	47
Approach to the population.....	49
Recruitment of participants.....	50
Data Collection.....	52
Quantitative Data Collection.....	52

Qualitative Data Collection .....	58
Data Analyses.....	61
Quantitative Data Analysis .....	62
Qualitative Data Analysis .....	77
Ethical Considerations.....	80
Account of my ‘self’ in the research .....	82
CHAPTER FOUR – THE TIMING OF MENOPAUSE .....	90
Discussion .....	103
Conclusion.....	115
CHAPTER FIVE– EXPERIENCE OF THE MENOPAUSAL TRANSITION.....	117
Limitations of Bypassing Women’s Knowledge about Their Experiences .....	118
Limitations of Asking Only About the Symptoms on Checklists .....	119
Does Culture Restrict Women’s Self-reporting of Menopause Symptoms?.....	122
The Potential Contribution of New Data from Non-Western and Non-Clinical Sources..	122
Descriptive Statistics .....	123
Experience of the Menopause Transition.....	124
Responses to the Symptom List .....	126
Factor Analysis.....	128
Relationship between Factor Scores and Other Variables .....	130
Ethnographic Data.....	131
Discussion .....	134
Universality of Menopause Experience.....	137
Conclusion.....	138
CHAPTER SIX – PREDICTING THE EXPERIENCE AND SEVERITY OF HOT FLUSHES .....	139
Predictors of Hot Flush Experience .....	146
Predictors of Hot Flush Severity .....	154
Discussion .....	160
Conclusion.....	169
CHAPTER SEVEN: MENOPAUSE, REPRODUCTION, AND MEANING .....	171
Reproduction, Social Hierarchies and Sharing of Information .....	171
Experiences of Menarche and Menstruation .....	173
Pollution and the Margins of the Body .....	175
Secrecy and Modesty .....	176

Menopause .....	183
Discussion .....	188
Conclusion.....	195
CHAPTER EIGHT: DISCUSSION AND CONCLUSION .....	196
Summary of Major Findings .....	198
Predictors of Timing of Menopause and Predictors of Hot Flushes.....	198
Symptoms of Menopause .....	200
Social Influences on Perceptions of Menopause .....	201
Theoretical Implications.....	202
Generalisability of findings .....	203
Menopause and the Role of Social Influences on the Soma.....	204
Menopause in Evolutionary Perspective .....	206
Reflections on Methodology and Recommendations for Future Research.....	208
Conclusion.....	212
APPENDIX ONE - MENOPAUSE, SOCIODEMOGRAPHICS AND HEALTH QUESTIONNAIRE .....	215
APPENDIX TWO - SUINN-LEW ASIAN SELF-IDENTITY ACCULTURATION SCALE (SL-ASIA).....	226
APPENDIX THREE - PAKISTAN ANXIETY AND DEPRESSION SCALE .....	230
APPENDIX FOUR: IMAGE OF FIVE GLASSES.....	231
REFERENCES .....	232

## LIST OF TABLES

Table 3.1: Selected characteristics of the overall sample .....	62
Table 3.2: A simplified illustration of the type of contingency table used within various logistic regression models.....	63
Table 4.1: Descriptive statistics for continuous variables .....	93
Table 4.2: Descriptive statistics for categorical and ordinal variables .....	94
Table 4.3: Continuous Predictors of the Timing of Menopause in Ordinal Logistic Regression in Univariable Models.....	96
Table 4.4: Ladder Status as a Predictor of the Timing of Menopause in Multinomial Logistic Regression.....	97
Table 4.5: Categorical and Ordinal Predictors of the Timing of Menopause in Ordinal Logistic Regression (univariable models) .....	98
Table 4.6: Predictors of the Timing of Menopause in a Single Multivariable Ordinal Logistic Regression Model .....	101
Table 4.7: Multivariable Model of Predictors of the Timing of Menopause in Binary Logistic Regression.....	103
Table 5.1: Variables describing the sample .....	124
Table 5.2: Changes due to menopause by open self-report grouped by frequency .....	125
Table 5.3: Attribution of symptoms to menopause.....	127
Table 5.4: Loadings for five factors extracted with varimax rotation .....	129
Table 6.1: Descriptive statistics for continuous variables .....	143
Table 6.2: Descriptive statistics for categorical and ordinal variables .....	144
Table 6.3: Continuous Predictors of Hot Flush Experience in Univariable Models .....	147
Table 6.4: Categorical and Ordinal Predictors of Hot Flush Experience in Univariable Models .....	148
Table 6.5: Predictors of Experience of Hot Flushes in a Single Multivariable Model.....	152
Table 6.6: Final Multivariable Model of Predictors of Experience of Hot Flushes .....	153
Table 6.7: Predictors of Hot Flush Severity in Univariable Models.....	155
Table 6.8: Predictors of Severity of Hot Flushes in a Single Multivariable Model.....	159



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## **PREFACE**

This research employs a biosocial research design to examine the timing and experience of menopause in a sample of British Pakistani women. Two aims in particular predominate: (1) to assess potential predictors of the timing and experience of menopause among British Pakistani women, and (2) to develop a contextualised understanding of the perceptions of, and beliefs about, menopause and reproductive ageing among British Pakistanis in Bradford and Leeds.

Data collection toward the first aim involves both quantitative and qualitative methods to develop multi-factorial models of influences on timing and experience of menopause. This project treats timing and experience of menopause as dependent variables acted upon by multiple biological and socio-cultural independent variables. Timing of menopause refers to the age at natural menopause (as determined after 12 successive months of amenorrhea) grouped into ordinal age categories. Experience of menopause is constructed through a self-reported list of changes experienced due to menopause in which each participant has scored the severity of each symptom on a five point scale. Hot flushes, as the most frequently reported symptom, are explored in quantitative analyses to test hypotheses regarding predictors of their experience and severity.

Data collection toward the second aim, namely to develop an understanding of the meaning that menopause and reproductive ageing have for women in the specific context of living in West Yorkshire as women of Pakistani origin, including their beliefs about the menopause transition, includes both quantitative and qualitative data collected during 12 months of ethnographic fieldwork via several methods. In particular, the changes which women experience at mid-life which they believe to be associated with menopause are explored. The wider context of the (social) lives of middle-aged British Pakistani women is explored in depth in order to fit understandings and experiences of menopause and the menopause transition within the structure of beliefs, norms, and roles important to these women.

The reasons for conducting this study are threefold. Firstly, studying the timing and experience of menopause can help us to achieve a better understanding of human biology and evolution. In contrast to the view of menopause as premature organ failure, the evolutionary perspective taken in the present study sees menopause as potentially adaptive and variation in

menopause likewise. Thus, studying variation in timing of menopause can help us to understand to what extent our bodies have evolved to be responsive to our social and biological environments. Understanding variation in the experience of menopause is also important, as it can help us to identify which aspects of human experience are fixed and inevitable and which are changeable, for example whether hot flushes are universally experienced by women at menopause. This may also help us to determine whether women who would prefer to could avoid experiencing hot flushes or other symptoms by modifying risk factors (rather than by pharmaceutical means).

Secondly, British Pakistanis are an interesting population in which to study ideas of the body, ageing, and health. This is partly because Pakistan has a rich and complex history in which influences from Central Asia, the Arab world, and Britain have added to traditions and ways of thinking which are more indigenous to South Asia. In the case of British Pakistanis, the profound emphasis in the British context on the biomedical model of the body adds to the diversity of ideas available to individuals in their attempts to understand and interpret their bodies. British Pakistanis are also interesting to study because the changes experienced in Pakistani and British Pakistani identity since the early period of migration to the UK have been profound, as British Pakistanis have variously sought to identify themselves as Pakistani, as South Asian, as black, and as Muslim, partly in response to their changing relationships to wider British society.

Thirdly, my interest in studying the topic of menopause stems from both my previous research on human reproduction and a recognition of the role of women's understandings of their own bodies in influencing their quality of life. During my previous research on predictors of timing of menarche, I developed a particular interest in the influence of life experiences, particularly those very early in life, on reproductive function, a theme which is continued in the present study. This emphasis on understanding menopause's adaptive relationship to life experience may, if borne out by research (including the present study), be a refreshing perspective for those who have become accustomed to thinking of menopause as pathological. That is, it is hoped that women who dread menopause and liken it to a disease may perhaps be comforted by knowing that its occurrence appears to be responsive to their life experiences as a healthy function of their bodies. British Pakistani women in particular may also be interested in the present study because it can give them some insight into their own ways of thinking about menopause, and the possible effects on their biology of growing older in the UK. The research may also be of use to health professionals working with

British Pakistani women, by helping to provide a sense of what women's perceptions of menopause may be.

This dissertation is structured in the following way:

In Chapter One, I review the quantitative and qualitative literature about menopause elaborating on weaknesses in previous approaches to the study of menopause in order to contextualise the one adopted in this dissertation.

In Chapter Two, I review the ethnographic literature about British Pakistanis, focusing particularly on the topics which are most relevant to the present study.

In Chapter Three, I outline the biosocial perspective, the epistemological and ontological approaches, and the methods of data collection and analysis adopted in the present study.

In Chapter Four, I test several hypotheses regarding predictors of timing of menopause.

In Chapter Five, I review some of the previous research on menopause symptomatology, most of which has used standard checklists, and propose and explore an alternative approach.

In Chapter Six, I test several hypotheses regarding prediction of hot flush experience and hot flush severity.

In Chapter Seven, I present qualitative findings about women's experiences of menopause, which I link to their experiences of menstruation and reproduction as well as aspects of the broader social context in which their lives are led.

In Chapter Eight, I discuss the results presented in Chapters Four through Seven.

## **CHAPTER ONE – REVIEW OF PREVIOUS RESEARCH ON MENOPAUSE**

### **Introduction**

Menopause is a universal biological phenomenon experienced by all human females who live into old age. It is often researched with the justification that menopause is a threat to health (Thomas 2005; van Noord et al. 1997; Dvornyk et al. 2006), though this view has recently received some criticism (Im, Meleis, and Park 1999; Lock 1998). It is also often treated as an event, the last menstrual period, which is retrospectively identified after 12 months; however, it is generally experienced as a process (Leidy 1994) with so many different cultural meanings that some have suggested it can be considered as much a cultural construct as a biological event (Lock 1998). The timing of menopause and the experience of changes in wellbeing associated with it, generally called menopausal symptoms, vary greatly between individuals and between populations.

### **What Causes Menopause?**

There is no consensus on the underlying cause of menopause in the scientific community, and it is not clear whether menopause is triggered by insufficient ovarian follicle numbers or by primary hypothalamic failure. However, there is consensus that menopause involves both the depleted ovarian follicle numbers and changes in levels of estrogen, follicle stimulating hormone (FSH), and inhibin B. At the time of menopause there are only about 1000 follicles left, which are incapable of maturing (Wallace and Kelsey 2004). Estrogen levels begin to decrease six months before menopause and FSH levels generally rise after menopause until the fourth year postmenopause (Rannevik et al. 1995).

Like menopause as a whole, follicular atresia is not fully understood. It is a process which begins in early fetal life (around the twentieth week of gestation), at which point there are 6-8 million primordial follicles (which have the capacity to become ova). By 40 weeks, however, there are only 1-2 million left, decreasing to about 700,000 at birth (Faddy and Gosden 1996) and decreasing more in early postnatal life (de Felici et al. 2005). There appears to be wide individual variation in number of follicles at each point in the lifespan, although only about 400 follicles are ever ovulated during the reproductive lifespan of western women (Faddy and

Gosden 1996; Leidy 1999). A previous mathematical model suggested that at around 35 years of age, when follicle numbers are estimated to be around 25,000, the rate of follicular atresia increased until menopause was reached (Faddy and Gosden 1996). However, a re-analysis of published data indicates that this model is incorrect, being a result of a serious misinterpretation of a log-linear plot of follicle numbers by age, and that follicular decline is roughly constant in the years prior to menopause and possibly lower in the several years before menopause than at any other time (Leidy, Godfrey, and Sutherland 1998).

### **Why is there a menopause?**

A second critical question is why menopause should occur. Though *Homo sapiens* was once thought to be unique to the order *Primates* in having a lifespan that continues long after reproductive years have ended, recent research has indicated otherwise (reviewed in Walker and Herndon 2008). Approximately half of the potential human female lifespan is lived after menopause and reproductive function in human females begins to decline long before other organ systems begin to show signs of senescence (Hill and Hurtado 1991). Despite prevalent conceptions of menopause as a form of pathology among some members of the medical establishment, it is considered by many to be a normal part of female reproductive ageing (Mackey 2004). Among these are anthropologists and reproductive biologists who have begun to question why menopause has evolved in our species (Hawkes et al. 1998; Peccei 2001; Lahdenperä, Lummaa, and Russell 2004; Kuhle 2007).

Seven main hypotheses have emerged:

1. *The self-protection hypothesis* suggests that menopause evolved to protect the individual from wasted reproductive effort in the form of pregnancies that are unlikely to result in live births due to decreasing follicle quality and increasing hazards of fetal loss or birth defects due to chromosomal abnormalities.
2. *The mothering hypothesis* suggests that menopause evolved to allow ageing mothers to shift investment to provisioning existing offspring rather than investing in new offspring, thereby increasing the fitness of their children.
3. *The grandmother hypothesis* suggests that menopause evolved to increase the survival and fitness of grandchildren who carry similar genes since non-reproductive grandmothers can then help their daughters to raise children.
4. *The human longevity hypothesis* suggests that menopause itself has not been selected for but instead is a consequence of selection for longevity in our species, thus the human female lifespan outstrips the supply of follicles.



5. *The time-delayed antagonistic pleiotropy hypothesis* suggests that menopause itself has not been selected for but instead is a consequence of selection for traits which make successful reproduction early in life more likely.

6. *The patriarch hypothesis* is similar to the human longevity hypothesis but instead suggests that menopause is a consequence of selection for longevity in men, thus women are ‘dragged along’ because the longevity trait or traits are on the X rather than the Y chromosome, leading to a lifespan which outstrips the supply of follicles.

7. *The absent father hypothesis* suggests that menopause evolved because paternal investment decreased (because of death or defection) as maternal age increased, making births to older mothers increasingly costly.

While some of these hypotheses are mutually exclusive of others, we can identify hypotheses which are mutually compatible with one another. Thus, hypotheses 1-3 (the Self Protection Hypothesis, the Mothering Hypothesis, and the Grandmother Hypothesis) are not mutually exclusive of one another. Similarly, numbers 4 and 5 (the Human Longevity Hypothesis and the Time-Delayed Antagonistic Pleiotropy Hypothesis) are mutually compatible and the same is true of 6-7 (the Absent Father Hypothesis and the Patriarch Hypothesis). Of all of these, the most often investigated is the Grandmother Hypothesis. There is some evidence to support the prediction that the presence of grandmothers is advantageous to grandchildren by increasing their likelihood of survival (Volland and Beise 2002; Jamison et al. 2002; Gibson and Mace 2005; Sear, Mace, and McGregor 2000), especially in early life (Shanley et al. 2007). However, findings regarding the prediction that the longer women live after menopause, the more of their grandchildren will survive into the next generation are conflicting (Lahdenperä et al. 2004; Madrigal and Meléndez-Obando 2008). In addition, this protective effect may only apply to maternal grandmothers since paternal grandmothers may have a detrimental effect on the fitness of grandchildren (Gibson and Mace 2005; Sear, Mace, and McGregor 2000; Volland and Beise 2002).

Hypotheses 4, 5, and 6 (the Human Longevity Hypothesis, the Time-Delayed Antagonistic Pleiotropy Hypothesis, and the Absent Father Hypothesis) have not generally been researched. Contrary to hypothesis 5, the Time-Delayed Antagonistic Pleiotropy Hypothesis, there is evidence from natural fertility populations with no access to health care that women reproducing late in life may produce more offspring than those that terminate reproduction early, making early reproductive success no more advantageous than late reproductive success (Helle, Lummaa, and Jokela 2005). Hypotheses 1-3 (the Self Protection Hypothesis, the Mothering Hypothesis, and the Grandmother Hypothesis ) and 6-7 (the Absent Father Hypothesis and the Patriarch Hypothesis) may in practice all operate via programmed

responsiveness to factors in the internal or external environmental which signal that investment in further pregnancies would be disadvantageous. However, these hypotheses do not directly address the established existence of variation in timing of menopause.

There is evidence of responsiveness of the reproductive system to the environment at the level of the individual at other points in the reproductive lifespan (Ellison 1996; Ellison 1990; Ellison et al. 1993). Kuhle (2007) has addressed the link between the hypotheses and variation in timing of menopause in the Adaptive Onset Hypothesis (AOH) but has suggested that the most important factor may be the likelihood that offspring would survive to reproductive age. He proposes that the mechanism for hastening or delaying menopause may be psychological and sensitive to the investment needs of children and grandchildren and future child-rearing capacity. He also suggests that if the needs of currently dependent kin outstrip the ability to rear future offspring then the mechanism could cause follicle stimulating hormone (FSH) to rise, increasing follicular atresia and hastening menopause. Evidence for this hypothesis would also support the adaptationist hypotheses from the list above (the Self Protection Hypothesis, the Mothering Hypothesis, the Grandmother Hypothesis, and the Absent Father Hypothesis, though Kuhle (2007) does not mention the Self Protection Hypothesis), and would possibly help to determine whether all are equally important.

The dysregulation of the hypothalamic-pituitary-ovarian (HPO) axis which occurs in middle-age may itself be evolutionarily advantageous since it has been suggested to partially compensate for the loss of fecundity associated with reproductive ageing. The higher FSH levels cause more of the remaining responsive primordial follicles to be recruited (Klein et al. 1996a) increasing the possibility of ovulation and potential conception as the end of the reproductive lifespan nears (Gougeon, Ecochard, and Thalabard 1994). This could be seen as somewhat at odds with Kuhle's AOH which implicates rising FSH as a mechanism for turning off reproductive function.

However, the AOH is very useful in providing a link between the literature about timing of menopause (which rarely addresses larger questions such as this) and the literature about the origin of menopause. The link is provided by the hypothesis' prediction of ten variables to be associated with earlier menopause. Unfortunately, Kuhle (2007) does not explore or suggest potential mechanisms underlying the relationships he predicts, thus the issue of biological plausibility remains unaddressed. Kuhle predicts that early menopause will be associated

with poor health, having a husband with poor health, having a husband with a history of extra-pair relationships, an older husband, absence of a husband, low body fat (below the threshold for conception and pregnancy), presence of dependents who require several years of investment to reach reproductive age, a history of high risk pregnancies, absence of kin who could help raise future offspring, and limited monetary resources. The hypothesis also predicts two variables that will be associated with later menopause: first, a husband likely to protect and invest in future offspring and, second, no children or grandchildren to invest in. As will be apparent below, few of these predictions have been investigated and those which have been studied have not yielded a conclusion as to whether the Adaptive Onset Hypothesis should be rejected. It is possible that other variables, those which indicate that investment in offspring later in life would not be advantageous, may fit into this framework as well.

### **Previous Research on Menopause**

#### **Variation in Timing of Menopause**

Understanding the factors which influence age of menopause has evolutionary implications because it may shed light on the reasons why menopause has evolved, as well as why plasticity in the timing of menopause has evolved. For example, if experience of nutritional stress leads to an earlier menopause then this could indicate that early menopause represents a way of permanently ‘turning off’ reproduction to protect the mother from investment in offspring which are not likely to be viable or which would put too much strain on the mother’s own soma. To explore these possibilities, the research into the factors which influence the timing of menopause, both those hypothesised by Kuhle (2007) and those not, can be scrutinised with a view to (1) determining possible mechanisms which affect the timing of menopause and (2) providing insight into the evolutionary logic of these mechanisms. This strategy would thus take into account what we know about the history of our species, though this has not been the typical approach to research on timing of menopause. Instead, the rationale given for the study of influences on timing of menopause is generally one which emphasises a link to morbidity associated with an increasing population of postmenopausal women, as Lock (1993) points out.

Whatever the rationale, the attempts to understand the variation in age at menopause have failed to produce consistent patterns and findings have frequently conflicted with one another. There is little discussion about whether the statistical relationships between timing of menopause and variables such as social class or education are found because (a) the variables represent an exposure which influences reproductive biology, (b) they indicate the existence of biologically (even genetically) different subpopulations (since the social class and education of an individual is often related to the social class or education level of her parents), or (c) they are a proxy for some other characteristic which would influence reproductive biology more directly (such as exposure to exogenous reproductive hormones). Indeed, the question of biological mechanisms underlying statistical relationships is infrequently considered.

Even less often considered are the particular meanings of socio-cultural variables used in quantitative analyses of variation in age at menopause, which can point to whether particular biological mechanisms are, in fact, plausible. Answering the question ‘what does it mean in a person’s life (materially, psychologically, etc.) to be from a particular social class?’ may help one to exclude potential biological mechanisms (for how social class might influence age at menopause) which do not fit the data. The answers are also likely to be context-specific, since social class, even measured using the same scale, may mean a very different social and biological environment in one place versus another. I will now review some important issues in the previous research on variation in timing of menopause with reference to the above points.

### *Social Context*

As argued above, the quantitative research on menopause often overlooks the importance of social context when determining what study results indicate about human biology and the methods used are often inadequate to the task of illuminating how variables used in the analyses operate on a biological level. A particular example of this is the research on timing of menopause and occupation. In several studies, age at menopause has been shown to vary by employment status (Ortiz et al. 2006) or occupation (Do et al. 1998; Cagnacci et al. 2005). These studies have generally shown that women who are employed, particularly those employed in higher status jobs, experience later menopause. However, some studies have found significant associations with the participant’s husband’s occupation but not with the

participant's own occupation (Ayatollahi, Ghaem, and Ayatollahi 2005), while others have found no association independent of confounders (Johnston 2001; Aydin et al. 2005) or no significant association at all (Shinberg 1998; Özdemir and Çöl 2004). These inconsistent results may be related to different circumstances and correlates of women's employment in different contexts. For example, in some cases, employment may be an indicator of higher status (and greater access to resources), particularly where employed women can obtain jobs which are high paying, whereas in others it may be higher status (and indicate greater access to resources) to remain unemployed. None of the studies which have investigated occupation/employment have employed methods which would allow them to establish a relationship between this variable and any biological process.

Similarly, studies have found inconsistent associations between educational level and menopausal age. Some studies have found a positive association (Do et al. 1998; Ortiz et al. 2006; Cagnacci et al. 2005; Sievert and Hautaniemi 2003; Brett and Cooper 2003; Özdemir and Çöl 2004; Johnston 2001; Reynolds and Obermeyer 2005) while others have found either no statistically significant association (Ayatollahi, Ghaem, and Ayatollahi 2005; Reynolds and Obermeyer 2003; Parazzini, Negri, La Vecchia 1992; Palmer et al. 2003; Reynolds and Obermeyer 2001; Garrido-Latorre et al. 1996; Aydin et al. 2005; Nagel et al. 2005) or no statistically significant association independent of confounders (Bromberger et al. 1997; Shinberg 1998). If Brett and Cooper (2003) are correct in their suggestion that, among US women, education is a marker for exposure to daily stress, then the extent to which this is true in other contexts is likely to vary dramatically since norms about, and correlates of, women's education are not consistent cross-culturally or across time. This suggestion would therefore indicate a reason for the inconsistency in findings regarding education and timing of menopause.

Studies have used other indicators of socio-economic status (SES) with a similar lack of clarity about what they indicate (or what they are proxies for). Several studies have investigated associations between menopausal age and SES using type of residence (Reynolds and Obermeyer 2003), self-rated social class (Do et al. 1998), or whether the participant is in receipt of some form of government assistance (Ortiz et al. 2006; Özdemir and Çöl 2004; van Noord et al. 1997), as a marker of SES; other studies used numerous indicators of socio-economic status in a single article (Lawlor, Ebrahim, and Smith 2003; Hardy and Kuh 2005), while others did not adequately explain their method of determining

SES (Garrido-Latorre et al. 1996; Wasti et al. 1993). The results of studies using such varied indicators of SES have varied themselves, as would be expected.

Some studies have contained statements of unclear origin about what particular predictors indicate. For example, a cross-sectional study of 742 women from United Arab Emirates (UAE) investigated the potential relationship between consanguineous marriage and age at menopause (Bener et al. 1998). Consanguineous marriage is common in UAE and the authors state that it is a socially supportive custom, though they do not provide data which might support such a claim nor discuss why a socially supportive custom should influence the timing of menopause (Bener et al. 1998). Women in consanguineous marriages were found to be significantly older ( $p < 0.005$ ) at menopause (mean  $\pm$  SD =  $47.61 \pm 3.14$ ) than women in non-consanguineous marriages in the same context (mean  $\pm$  SD =  $46.95 \pm 3.42$ ) (Bener et al. 1998). Though this association itself was not subjected to analysis in a multivariable model containing potential confounders, separate analyses showed that women in consanguineous marriages also had significantly older ages at interview, greater body weights, more children, were more likely to be employed in manual occupations, less likely to be living in villas (a more expensive form of accommodation), and that their mothers and sisters also had later ages at menopause (Bener et al. 1998). Any of these variables could be responsible for the association found between consanguineous marriage and the timing of menopause. Thus, it is not clear whether Bener and colleagues are correct that it is the social support within the consanguineous marriages which account for later menopausal ages.

A study of 948 Iranian women living in Shiraz also found consanguineous marriage to be associated with a later age at menopause (t-test;  $p = 0.027$ ) (Ayatollahi, Ghaem, and Ayatollahi 2005). The authors do not comment on why there should be such an association. Consanguineous marriage is unlikely to have a single universal social meaning nor to reflect the same biological influences. As such, it is questionable whether the results of the UAE and Iranian studies are actually due to the same underlying mechanism.

In some cases, the wider social context is considered but not adequately, as in case of the relationship between age at menopause and the length of the interval from marriage to first birth. Two studies have investigated the length of the interval between marriage and first birth and menopausal age in women who have not used oral contraceptives (van Noord et al. 1997; Varea et al. 2000) and only one found a significant association (van Noord et al. 1997). Varea and colleagues (2000) used Spanish historical records to examine the association

between menopausal age and the interval between marriage and first birth as a marker of fecundity since, during the period covered, artificial contraception was illegal. The Spanish study found no significant association between the timing of menopause and the length of the first birth interval. Because the study was based on historical records it did not take account of whether women were trying to avoid pregnancy by non-artificial means. Non-artificial contraception is likely to have been an important factor since, during the period studied, the only legally and morally acceptable method of birth control for Roman Catholics in Spain was the calendar-based 'rhythm method'. The study which did find an association between timing of menopause and the length of the interval from marriage to first birth was a Dutch cohort study (van Noord et al. 1997). Van Noord and colleagues found their significant association by separating women who had used contraceptives from those who had not, in a context in which contraception was not illegal and would have been far less taboo (van Noord et al. 1997).

Similar issues regarding the influence of aspects of the wider social context apply to the studies of the association between pregnancy and childbearing history and menopausal age. Studies have found inconsistent results when testing for associations between parity<sup>1</sup> or number of pregnancies and menopausal age. While some studies report a significant positive association between parity and menopausal age (Elias et al. 2003; Ortiz et al. 2006; Parazzini, Negri, and La Vecchia 1992; Garrido-Latorre et al. 1996; Do et al. 1998; Nagel et al. 2005; Lawlor, Ebrahim, and Smith 2003; Whelan et al. 1990), others find no significant association (Reynolds and Obermeyer 2001, 2003; Cagnacci et al. 2005; Palmer et al. 2003; Varea et al. 2000; Sievert and Hautaniemi 2003; Shinberg 1998; Johnston 2001; Aydin et al. 2005; Özdemir and Çöl 2004) or no independent association (van Noord et al. 1997; Bromberger et al. 1997; Reynolds and Obermeyer 2005). Two of the above studies found a positive trend of increasing parity with increasing menopausal age (Ayatollahi, Ghaem, and Ayatollahi 2003; Garrido-Latorre et al. 1996). Others finding an association found only a difference in menopausal age when comparing nulliparous<sup>2</sup> or primiparous<sup>3</sup> women to women with (more) children.

It is interesting to note that in the countries where a positive trend was found (Iran and Mexico), women were more likely to have experienced disapproval for appearing to be

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<sup>1</sup> Parity here means the number of liveborn children a woman has delivered

<sup>2</sup> Women with no liveborn children

<sup>3</sup> Women who have had a single live birth

limiting family size at the time they were of reproductive age. In contrast, in the countries in which timing of menopause differed between nulliparous/never pregnant women and those with children/pregnancies, the decision to avoid pregnancy or childbearing was one that was in line with trends toward increasing nulliparity at the time (the US, Australia, Germany, the UK) (McAllister and Clarke 2000; DeVaus 2002; Poston and Kramer 1983; Gillespie 2001). This indicates that it may be important to understand the broader context in which reproductive decision-making takes place. For example, nulliparous menopausal women in countries where this is increasingly common are likely to be different in many ways (possibly both biological and social) from nulliparous menopausal women in countries where this has not been considered normal.

### ***The Question of Biological Mechanisms***

Another issue apparent in previous research on timing of menopause is that many studies do not make explicit suggestions of potential biological mechanisms underlying associations found. This applies to most of the studies mentioned above. In some cases, there have been exceptions within the body of research on particular predictors. For example, several studies have tested for associations between menopausal age and aspects of childhood social circumstances (Lawlor, Ebrahim, and Smith 2003; Hardy and Kuh 2005; Garrido-Latorre et al. 1996; Shinberg 1998; Ayatollahi, Ghaem, and Ayatollahi 2005). Some of these studies have used rural residence in childhood or having lived in a farming household as an indicator of socio-economic status (Garrido-Latorre et al. 1996; Shinberg 1998; Ayatollahi, Ghaem, and Ayatollahi 2005), usually assumed to indicate low status, but only one study has found an independent relationship between farming/rural residence in childhood and early menopause status (Shinberg 1998). Other studies have looked at multiple indicators of childhood socio-economic status (Lawlor, Ebrahim, and Smith 2003; Hardy and Kuh 2005). Hardy and Kuh (2005), whose data are from a large prospective cohort study, have noted that social circumstances in childhood and adulthood are largely independent predictors of the timing of menopause. Hardy and Kuh have suggested that the association between adult housing tenure (and indicator of SES) and timing of menopause may simply reflect influences of early nutrition (a factor related to social circumstances in childhood) on both menopause and cognitive development.



Additionally, a study that investigated the potential relationship between ovarian function late in life and early life experience of abuse found similar results to the above studies which examined the role of social circumstances (Allsworth et al. 2001). Women 41-45 years of age who had experienced violent abuse in childhood or adolescence had higher FSH levels and lower estradiol levels (both considered signs of the menopausal transition) than those not abused (Allsworth et al. 2001). Women 36-40 years of age who had experienced abuse had higher FSH levels but not lower estradiol compared to women who were never abused (Allsworth et al. 2001).

It is not surprising that use of such different measures of childhood social circumstances have produced different results, however, most authors do not comment on the inconsistencies at all. While it is not clear what the mechanisms underlying the associations that have been found are, the work of Allsworth and colleagues (2001) and Hardy and Kuh (2005) indicates that the associations may have a psychological basis, perhaps involving the relationship between hypothalamic-pituitary adrenal (HPA) axis and the hypothalamic-pituitary ovarian (HPO) axis.

Some authors (e.g. Sievert, Waddle, and Canali 2001) have gone a step further by hypothesising biological mechanisms as well as trying to explain why previous results have been inconsistent. While studies from the Americas and Europe have frequently shown no significant association between marital status and menopausal age independent of confounders such as parity (Ortiz et al. 2006; Parazzini, Negri, La Vecchia 1992; Sievert and Hautaniemi 2003; Reynolds and Obermeyer 2005; Garrido-Latorre et al. 1996; Johnston 2001; Özdemir and Çöl 2004; Brett and Cooper 2003), some studies from the Middle East have found associations with marital status or aspects of marital status (Ayatollahi, Ghaem, and Ayatollahi 2005; Bener et al. 1998), though there are some exceptions (Sievert, Waddle, and Canali 2001; Reynolds and Obermeyer 2003). Sievert, Waddle, and Canali (2001) hypothesised a pheromonal basis to the associations found between age at menopause and marital status. Sievert, Waddle, and Canali also suggested that inconsistencies in finding such relationships may be related to differences in living arrangements, sexual activity, and the presence of non-husband partners (such as live-in boyfriends or lesbian partners) in some contexts.

Overall, the picture that emerges from reviewing research into predictors of timing of menopause is one of inconsistent results. Reviewing some of the existing studies has

suggested that this inconsistency may be related to the overall sparsity of attention paid to social context and biological mechanisms. A greater understanding of the socio-cultural context in which the factors suspected to influence the timing of menopause arise could therefore help determine which other factors may mediate or modulate the effects on timing of menopause or, in fact, confound the associations. In addition, greater attention to the question of what biological mechanisms could potentially underlie the statistical associations found is required and attempts to illuminate biological mechanisms may also benefit from a better understanding of socio-cultural context.

### **Intra-population Variation in Symptom Experience**

A number of studies have also attempted to understand the reasons for intra-population variation in experience of changes associated with menopause, often called 'symptoms'. These studies often categorise individual symptoms into groups with other similar experiences (e.g. hot flushes and night sweats grouped together as vasomotor symptoms; insomnia and wakefulness grouped together as sleep symptoms). These studies generally collect menopausal symptom experience via use of standard checklists of menopausal symptoms (see Chapter Five for a discussion of menopause symptom checklists). Many of the same problems outlined above are apparent in the research into the predictors of menopausal symptoms, though this body of research is considerably smaller. Study results are often inconsistent and a problematic absence of consideration of social context is apparent. Furthermore, few explicit hypotheses to explain variation in any symptom experience have been put forward or tested.

As with timing of menopause, consideration of the social significance of variables used in analyses is generally absent. This is evident in the research which has investigated the possibility that socio-economic status influences menopause experience. As with timing of menopause, studies have looked at symptom reporting differences between women from different socio-economic backgrounds using a range of different socio-economic indicators. None of these have suggested any biological mechanisms by which socio-economic status would increase or reduce hot flushes, though it has been suggested that psychosocial stress may play a role (Sierra et al. 2005). Most have found that women who are more educated, have fewer financial problems, have higher occupational social class jobs, or who have husbands in high social class jobs have been found to experience fewer menopausal

symptoms (Sierra et al. 2005; Sievert and Espinosa-Hernandez 2003; Dennerstein et al. 2000; Sievert, Obermeyer, and Price 2006; Avis et al. 2001; Obermeyer et al. 2002; Gold et al. 2000; Avis, Crawford, and McKinlay 1997; Kuh, Wadsworth, and Hardy 1997; Wilbur et al. 1998; Dennerstein et al. 1993; Schwingl, Hulka, and Harlow 1994), particularly hot flushes, vaginal dryness, night sweats, palpitations, fatigue, depression, and respiratory problems. However, some results do not fit this pattern: farmers in Japan (a lower status job) have been found to be less likely to experience vasomotor symptoms than non-farmers (Shiwaku et al. 2001), more educated US women have been found to report more psychosomatic symptoms than less educated women (Avis et al. 2001), and some studies have found no significant association between education and symptom experience (Obermeyer, Ghorayeb, and Reynolds 1999; Hollander et al. 2001; Gallicchio et al. 2005) or social class and symptom experience (Wasti et al. 1993). The lack of consistency in findings may be due to differences in the social circumstances underlying these indicators of socio-economic status or may be due to the use of different measures in different studies and populations.

It appears that even where a clear biological mechanism is suggested, results are still inconsistent and looking at population differences and social influences may be useful. Despite the fact that tobacco is thought to damage oocytes and thereby reduce estrogen levels (Harlow and Signorello 2000), which are thought to influence symptom experience (Dennerstein et al. 2002; Sievert 2006), results of studies which consider smoking as a predictor of experience of symptoms have been inconsistent. Several studies have found that cigarette smoking (each of current use, long-term use, high use, and former smoking) is associated with greater likelihood of experiencing hot flushes (Dennerstein et al. 2000; Gallicchio et al. 2005; Sievert, Obermeyer, and Price 2006; Ford et al. 2005; Whiteman et al. 2003). One study also found a significant association between smoking and urinary symptoms (Ford et al. 2005). Some studies, however, have found no significant association between smoking and hot flush experience (Hollander et al. 2001; Shiwaku et al. 2001) or between smoking and other experience of other menopausal symptoms including negative mood symptoms, sleep/fatigue symptoms, and hair/skin changes (Ford et al. 2005).

It appears that most of the studies which found an association between smoking and symptom experience had relatively high proportions of women who were current or former smokers (20-50%), whereas one of the studies which did not find an association which evaluated on the basis of non-smokers versus smokers had a relatively low percentage of smokers (<10%) (Shiwaku et al. 2001). The other study which did not find a significant association (Hollander

et al. 2001) used number of cigarettes per day as the indicator of smoking, which is not the measure used by other studies, and the relationship between smoking and menopausal symptom experience may not be a dose-response relationship. It is also possible that the social factors that determine whether a person takes up smoking may be related to symptom experience rather than a biological effect of tobacco on the ovaries, especially since studies often find that a history of smoking is related to symptom experience as well (Whiteman et al. 2003; Gallicchio et al. 2005).

As noted above, there are few hypotheses which address intra-population variation in symptom experience. One exception is in the case of adiposity and symptom experience, in particular, hot flush experience, which has been the subject of several hypotheses. Several studies have assessed potential associations between menopausal symptoms and measures of adiposity such as body mass index (BMI) and waist-to-hip ratio, but results have been inconsistent. Some have found that these measures have positive associations with symptom experience (Gallicchio et al. 2005; Young et al. 2003; den Tonkelaar, Seidell, and van Noord 1996; Ford et al. 2005; Whiteman et al. 2003; Chiechi et al. 1997; Freeman et al. 2001; Sternfeld, Quesenberry and Husson 1999; Wilbur et al. 1998) while other studies have found no significant association (Shin et al. 2005; Hafiz, Liu, and Eden 2007; Grisso et al. 1999; Staropoli et al. 1998) or no significant independent association (Hollander et al. 2001). Still other studies have found a negative association between measures of adiposity and likelihood of symptom experience, particularly hot flush experience (Guthrie et al. 1996; Huerta et al. 1995; Schwingl, Hulka, and Harlow 1994).

Based on early findings of a negative relationship, some researchers hypothesised that less adipose women's lower estrogen levels lead to more hot flushes whereas more adipose women's fat tissue converting androgens to estrone (a form of estrogen) should buffer them against hot flush experience. However, higher BMI has been associated with increases in hot flushes (den Tonkelaar, Seidell, and van Noord 1996; Gallicchio et al. 2005; Whiteman et al. 2003; Chiechi et al. 1997; Freeman et al. 2001; Sternfeld, Quesenberry and Husson 1999; Wilbur et al. 1998), as well as other symptoms such as sleep problems (Young et al. 2003; Sievert, Obermeyer, and Price 2006), and urinary problems (Sievert, Obermeyer, and Price 2006).

These findings regarding BMI have led to two opposing hypotheses. Klinga and colleagues' (1983) hypothesis predicted greater adiposity to be associated with greater likelihood of

experiencing hot flushes via causing early entry into perimenopause<sup>4</sup>, and a longer period of perimenopause. This is based on the previous finding that a relatively early and longer period of perimenopause was associated with greater risk of hot flushes (McKinlay, Brambilla, and Posner 1992). Klinga et al. (1983) suggested that adiposity leads to an early and long experience of perimenopause by causing ovarian insufficiency. The second hypothesis is that since hot flushes are the result of a narrowed thermoneutral zone (temperatures at which one neither shivers nor sweats) and greater adiposity means a more insulated body, that women with greater adiposity should be more likely to experience hot flushes.

However, from the standpoint of any of the hypotheses, it is not clear why results should be inconsistent, as Sievert (2006) has also noted. The reason may be that adiposity in some populations is a proxy for other exposures which influence symptom experience, such as socio-economic status, since these types of variables can either be associated with greater adiposity (Xu et al. 2005; Garcia and Alderman, 1989; Ferro-Luzzi et al. 1992), less adiposity (Galobardes, Morabia, and Bernstein 2000; Robert and Reither 2004), or show no clear relationship to adiposity (Shetty and James 1994; Khan, Sobal, and Martorell 1997), depending on the population.

It appears that variation in menopause symptom experience is being studied with the same lack of consideration of social context, though perhaps proportional to the number of studies into this variation there is more interest in finding mechanisms to account for variation. An understanding of social context could be useful in pursuing the suggested role of psychosocial stress in causing menopause symptoms. This, in turn, might help to better explain inconsistencies in the results of studies.

## **Research on Menopausal Symptoms among South Asians**

Many studies have documented the frequencies of reporting for various menopausal symptoms as part of an effort to determine whether there is a universal menopausal syndrome, or, to put it another way, to what extent the long documented pattern of symptoms that western women experience is caused by the biological process of menopause alone. Some research has also suggested that symptom reporting is affected by the use of long menopause checklists, leading women to report more symptoms than they would self-report

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<sup>4</sup> The period preceding the last menstrual period, characterised by both endocrinological and menstrual cycle changes

using open-ended questions (Holte 1991; Wright 1981). The importance of the influence of ‘local biologies’ of the experience of menopause has also been emphasised in this work, as cross-cultural differences in diet, activity patterns, and reproductive hormone levels may be responsible in part for the differences in symptom experience (Lock and Kaufert 2001).

No previous study has attempted to assess the types of symptoms experienced by British Pakistani women in particular, although a few studies have looked at South Asians in the UK or Australia, or South Asians resident in Pakistan (or neighbouring regions of India from which many people migrated to Pakistan at Partition in 1947), though few of these have been in-depth and none have used an explicitly biosocial perspective. Studies of symptom experience among women living in Pakistan have been of particularly poor quality and have reported wildly varying frequencies of symptom reporting. The approach of many of these studies of women of South Asian origin has been simply to publish the frequency of reporting symptoms from a checklist, often not the same checklist as used in any other study, making studies difficult to compare. Also complicating any effort to compare studies is the fact that the age range of women in the studies varies quite a lot; for example one study included an age range of 40-80 year old women (Yahya and Rehan 2002), while another included a far narrower range, 40-50 years (Sidhu, Kaur, and Sidhu 2005).

Furthermore, some studies used clinical samples which would be likely to bias the study toward women with more troublesome experiences of the menopausal transition (Khanum, Asif, and Tajammul 2001; Nusrat et al. 2008). This is a particular problem since the studies purport to describe Pakistani women’s experiences of menopause in order to compare it with the menopause experiences of women in other countries. Other problems include reporting that symptoms were ‘common’ but not reporting frequencies for all symptoms as in the case of Khanum, Asif, and Tajammul’s 2001 study. Their study of 200 Pakistani women aged 40-70 years of unspecified menopausal status attending a menopause clinic in Lahore reported that hot flushes, palpitations, lethargy, forgetfulness, and depression were common among the women though no frequencies were reported for these symptoms (Khanum, Asif, and Tajammul 2001). The study did report frequencies for some other symptoms: ‘about 20%’ of women reported vaginal dryness and urinary urgency and ‘about a third’ of the women reported increased urinary frequency, stress incontinence, and dyspareunia<sup>5</sup>.

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<sup>5</sup> pain during sexual intercourse

No clear picture of the typical symptom prevalence among South Asian women, or even Pakistani women living in Pakistan emerges from the studies which document symptom-reporting frequencies. There are dramatic differences in symptom frequencies across these studies and even among studies in the same region or city. In many cases, it is not clear whether the authors used checklists or open self-report of symptoms so it is difficult to be sure why the frequencies differ to the degree they do. However, quite a few studies report high frequencies (>40%) of tiredness or lethargy (Yahya and Rehan 2002; Qazi 2006; Hafiz, Liu, and Eden 2007; Sidhu, Kaur, and Sidhu 2005) and most report a high (>50%) frequency of report of hot flushes (Sidhu, Kaur, and Sidhu 2005; Nusrat et al. 2008; Adhi et al. 2007; Yahya and Rehan 2002; Qazi 2006) though there were clear exceptions in the case of hot flushes (George 1988b; Baig and Karim 2006; Hafiz, Liu, and Eden 2007).

### **Research on Attitudes and Beliefs Regarding Menopause**

Previous studies have used quantitative or qualitative methodologies to assess attitudes and beliefs about menopause and reproductive ageing in many different populations. Most of these studies have been done in last 25 years, many of them inspired by seminal works by medical anthropologists such as Yewoubdar Beyene and Margaret Lock. This research rarely attempts to engage with biological questions, though it is at times concerned with describing and understanding human variation. However, it has demonstrated the important role of social context in women's perceptions of menopause. Understanding women's perceptions of menopause may be more important than previously thought since some studies have found that beliefs and attitudes predict symptom experience (Sievert and Espinosa-Hernandez 2003; Avis et al. 2001; Dennerstein et al. 2000) including among western women (Avis et al. 2001; Dennerstein et al. 2000). Menopausal symptom experience may be influenced by the expectation of symptoms or the expectation of a difficult experience of the menopause transition. Few studies have examined expectations/beliefs about the menopause transition in a Muslim or South Asian context, though there are notable exceptions.

Lock's (1993) major work on Japanese women at midlife looked at the end of menstruation as well as at the Japanese concept of women's midlife transition, *konenki*. Lock found that *konenki*, which, at first glance, appears to be the same as the transition known in the West as menopause, with attendant physical and psychological symptoms, was not always considered by women to be related to the end of menstruation. Lock carried out a large number of

interviews as well as long term ethnographic fieldwork as part of developing an expertise on Japanese culture and society. Her work contextualised the narratives of the women interviewed within the politics, demographics, and history of Japan. In the book, Lock mainly looked at symptom experience at midlife and she used quantitative approaches to understand prevalence of symptoms though she did not try to understand symptoms in terms of biology,<sup>6</sup> instead choosing to look at the social context of beliefs about symptoms. She particularly examined ideas from within Japanese society about experience of a troublesome *konenki* being associated with wealthier, less active housewives. Lock also looked closely at inter-family relationships as important to understanding this transition and the symptoms experienced. She described problems with husbands, caring for mothers-in-law, and managing relationships with offspring as being very important to women at mid-life, more so, in some cases, than the end of menstruation.

Beyene's (1989) research about menopause in two cultures also made an important contribution to the biocultural study of menopause. Beyene spent one year carrying out ethnographic fieldwork in each of her two rural fieldsites: the village of Chichimila in the Yucatan in Mexico and the village of Stira on Evia in Greece. She used participant observation as well as survey methods, including census taking. She contextualised the analysis of meaning and experience of menopause in the two cultures within her ethnographic descriptions of the lives of women in the society.

The work identified that the Mayan women studied did not relate the end of menstruation with any physical or emotional changes besides menstrual changes and that they experienced no hot flushes. She found that menopause for these Mayan women meant a relief from problems associated with menstruation (staining garments, etc.), an end to pregnancy, and, in some cases, an improved sexual relationship and a feeling of returned youth. In speaking to local doctors and health workers, she established that the few women who do visit a health professional at menopause only require confirmation of the cause of their menstrual irregularity and they do not return for a second consultation about menopause. The Mayan women in the village believed that menopause came naturally when a woman had used up all of her menstrual blood through menstruating and having children, and they believed that a woman with no children would have a later menopause since she had not used up the blood as quickly.

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<sup>6</sup> More recently Lock has shown greater interest in biological aspects of menopause, e.g. Melby, Lock, and Kaufert 2005



Among the Greek women of Stira, on the other hand, Beyene found that menopause was viewed with more mixed feelings since it was associated with a time of greater social freedoms as well as an inevitable decline due to ageing. The Greek women experienced hot flushes which they believed were caused by their blood boiling up inside them and they expected these to pass within a year of final menstrual period without intervention. Beyene found that the women of Stira believed that the timing of menopause was important, that an early menopause could cause health problems because of the retention of unclean blood. Beyene's approach was more biosocial than that of Lock and she hypothesised some biological mechanisms for the variation in symptom experience she found. Beyene suggested that this variation was due to the effects of diet and fertility patterns on reproductive hormone levels.

A study of attitudes toward menopause carried out in Iran compared 49 rural and 70 urban postmenopausal women hypothesised that the urban group would have a more negative perception of menopause than would rural women. The authors suggested that exposure to a youth-oriented western culture, which generally takes a negative view of menopause, would have had greater impact on urban women, who would generally be more expected to have contact with western ideas (Khademi and Cooke 2003). Contrary to what the authors hypothesised, urban women in the sample tended to have more positive attitudes towards menopause (although this was not significant at the  $p=0.05$  level). The authors report that, in their spontaneous commentary during the questionnaire-based interviews, the rural women generally expressed negative feelings about menopause while the urban women often expressed that they thought it was positive and natural (Khademi and Cooke 2003). This finding indicates the importance of interviewing in person and allowing space for women to present their own perspectives.

Some studies documented attitudes and understandings of menopause but did not present these in a contextualised way nor did the authors look to understand what shaped women's perceptions of menopause. For example, an Indian study by Aaron and colleagues (2002) used a structured questionnaire administered to 100 postmenopausal married women aged 40-49 years living in rural Tamil Nadu in order to examine perceptions of menopause. The authors reported that 57% of women considered menopause to be 'very convenient', 69% of women thought it meant diminishing abilities and competence, a smaller percentage were concerned that their husbands would lose interest in them (16%) and that they would lose their femininity (11%) but none felt that their social status was improved because of

menopause, though the authors had predicted they would (Aaron et al.2002). Aaron and colleagues did not attempt to understand why such a large proportion of women considered menopause to indicate diminishing abilities.

The few studies which have taken place in Pakistan have been similarly decontextualised. A Pakistani study of 130 women aged 42 to 80 years old based on a random sample of women over 40 years old living in one area of Lahore found that 82.3% of women considered menopause to be a positive change (Yahya and Rehan 2003). A Pakistani study of 70 postmenopausal women over 45 years of age recruited from a hospital outpatient clinic in Islamabad found that not all women had heard of or knew about menopause (24.3% had not) (Mazhar and Gul-e-Erum 2003). The study also found that most women felt positive about the fact that their menstrual periods had stopped (75.7%), though a third of women were unhappy with their menopausal status (34.3%). Most women said they felt there was a need for more education about menopause (74.3%) and that they wanted to learn more about menopause themselves (78.6%). Nearly half of women interviewed felt that menopause required medical treatment (47.1%). These percentages are presented by the authors without discussion of the implications of the overlap in the findings between some seemingly contradictory views.

Another Pakistani study found that most women (60%) in a sample of 250 postmenopausal urban women from three different socio-economic backgrounds in Karachi felt menopause was a natural process, were happy that they were getting more time to pray (prayer during menstruation is considered by many to be prohibited in Islam), had a feeling of well-being, and felt 'clean' (Wasti, Kamal, and Robinson 1994). The authors reported that women felt relief that they could no longer have children and did not have to worry about contraception and add that "menopause was welcomed if the family size was complete" (1994:44). Another study from Karachi involving 925 women over age 35 used semi-structured interviews to find out about knowledge and perceptions of menopause (Baig and Karim 2006). They found that about 60% of women could explain that menopause was the cessation of menses for more than 12 months while about a quarter of women felt that they had enough knowledge about menopause. While 15% reported that they wanted menses to continue, 16% said that it was good to have menopause. The authors used a quantitative approach to understanding variation in perceptions of menopause and found significant differences between the women of different socio-economic status in the belief that it is good

to have menopause (chi-squared test,  $p < 0.011$ ): women of 'middle' socio-economic status reported this belief more often.

However, some studies of South Asian women did look to the wider context of women's lives to understand menopause from women's point of view. George (1996) interviewed 190 Indian women living in a coastal fishing village in Kerala and also carried out extensive participant observation. She found that the women associated menopause with being better in their work, describing it as common, natural, as representing freedom from trouble, a sign of ageing, and as a gift from God. George suggested that the view of menopause as a gift from God relates to the continuity of role as fish seller (the profession of most of the women interviewed) and identity throughout the lifetime. She contrasted this with women who think of themselves as wives or mothers, who would experience a role change at menopause which could lead to more negative experiences of and ideas about menopause. In contrast, Flint's (1975) ethnographic study of 483 Indian Rajput women in Himachal Pradesh and Rajasthan found that very few women experienced any changes during the menopausal transition other than menstrual cycle irregularities though they did experience a role change. She connected this with the finding that, in this group, women are considered no longer 'contaminative' after menopause and thus are allowed from then on to leave *parda* (female seclusion, discussed in Chapter Two) and spend time sitting, joking, and drinking alcohol with men. This finding indicates that the nature of the role change is also important, a change which would be interpreted as positive may not have the same effects as one which would be interpreted as negative.

Du Toit's (1990) study in South Africa used a combination of quantitative and qualitative methods to investigate the beliefs and attitudes relating to menopause and menstruation of women of Indian origin living on the outskirts of Pretoria. Fifty-six women between the ages of 34 and 75 were each interviewed four times, 29 of the women were premenopausal and 27 of the women were postmenopausal. Du Toit found that most of the women studied believed that menopause meant that a woman was no longer losing blood or using it to make a fetus so she retained the blood and this caused health problems. He found that more of the premenopausal than postmenopausal women believed that menopause was natural, normal, and did not cause ageing and ill health. Women who believed that the retention of old blood or impurities in the body could cause health problems said that it could cause a range of conditions including varicose veins, high blood pressure, diabetes, cancer, overweight (with enlarged breasts and a bloated stomach), breathlessness, and hot flushes (from having too

much blood). Despite this, the women said that their response to the end of menstruation (either the idea, for premenopausal women, or the experience, for postmenopausal women) is relief. Some cited the fact that after menopause they can more fully participate in their religion (both Hindus and Muslims), though some women said that the reason menses was a good thing was that it gave women a break from religious responsibilities. Many women believed that a postmenopausal woman no longer “feels for a man” and that after menopause women have their own beds or bedrooms. There was variation in explanations of why women experience an end to menstruation, some Muslim women said that God does not want old women to become pregnant, others said that women make less and less blood as they grow older until they make the same amount as men and don’t need to shed any excess.

A Canadian ethnographic study involving interviews with 50 Sikh women over the age of 35 living in Vancouver reported that these women felt that menopause was a welcome and eagerly anticipated life event (George 1988a, 1988b). These women openly discussed menopause with their adult daughters, and believed that their menopause would not be problematic, as their mothers had not experienced problems. While the women articulated menopause as being a ‘final cleansing event’ in its proper time, they believed that early menopause could cause headaches due to ‘blood going to the head’, and that late menopause could ‘drain all the energy out of [a woman].’ Postmenopausal women were considered ‘clean and free.’ The author argued that these feelings were a result of the patriarchal society from which the women came. That is, the feelings resulted directly from the perception that the ways in which women’s biology differs from men’s are deviant, thus the end of menstruation takes a woman “one step closer to that patriarchal ideal” (George 1988a:115).

The two studies on menopause which have included British South Asians were not ethnographic studies and the data they produced, while interesting, are quite thin, relating neither to social context nor to biology. The first is a cross-sectional study of women 45-55 years of age comparing 51 UK Caucasian women, 52 UK Asian women, and 50 Asian women living in Delhi (Gupta, Sturdee, and Hunter 2006). The study used the Menopause Representations Questionnaire (a standard questionnaire) to assess a range of beliefs about menopause including the positive and negative consequences of menopause, how long it might last, and the extent to which it is controllable. The groups did not differ statistically significantly in scores for ‘the feeling that menopause had a negative impact’, ‘the feeling that menopause takes a long time’, or ‘the feeling that menopause is a relief’. There was a significant difference in the scores for ‘the feeling that menopause represents a new phase of

life' ( $p=0.022$ ), Delhi Asian women had the highest score for this appraisal of menopause. There was also a significant difference in the scores for 'the feeling that menopause takes a short time' ( $p<0.001$ ), with Delhi Asian women scoring highest for this appraisal of menopause. There was a significant difference between the groups in score for 'the feeling that menopause can be controlled or cured' ( $p=0.016$ ) and UK Caucasian women scored highest in this appraisal of menopause.

The second study of menopause among British Asian women was a focus-group based qualitative study of 34 women of Asian origin living in Bradford District, West Yorkshire (White and Sharma 2000). This study found that non-professional women did not see menopause as a normal process and particularly thought early menopause was unhealthy and led to body weakness, weight gain, and sight problems. Many women also mentioned that they were glad to be able to take part in religious duties unhindered. Women said that they would feel ashamed to talk about menopause with their daughters and some said that their mothers had not seemed to suffer from any problems related to menopause, though others mentioned that their older female family members knew of some herbal remedies for these problems (White and Sharma 2000).

While the ethnographic studies carried out in various contexts found interesting results which were able to explain in depth women's ideas of menopause and the relationship of these ideas wider social issues (George 1988a, 1988b; du Toit 1990; Flint 1975; Beyene 1989; Lock 1993), the studies which were done among Pakistanis, both in the UK and in Pakistan, generally lacked such depth and detail and were not able to draw connections between menopause and other concerns and beliefs. These accounts are not sufficient for understanding the way in which menopause fits into the lives of Pakistani women and what their beliefs and understandings of this transition are.

While many of the studies discussed in this section concern women of South Asian origin, there are important differences between the groups studied, including religious differences, rural/urban differences. Additionally, some were studies of women living in South Asia whereas others were of women living in minority communities elsewhere in the world, and the extent to which menopause meant a change in social roles and responsibilities has varied. Accordingly, several studies found that women regarded menopause as a positive change in their lives, while in some others women were more ambivalent about it.

## **Conclusion**

While there has been a great deal of research about menopause, only one study (Beyene 1989) has attempted to understand both biological and socio-cultural aspects of this life transition. This is the case despite the clear need for greater understanding of context in the quantitative inquiries and the obvious biological questions raised by the many differences in local conceptions of what is experienced in the menopause transition (a phenomenon experienced universally). When findings are inconclusive or contradictory, as they are in the quantitative research on menopause, it indicates that something important is being missed. I have asserted that, in the study of menopause as a phenomenon, there is a role for a more careful consideration of possible biological mechanisms, which should be understood in the context of the evolution of our species. I have also argued that there is a role for qualitative methods, particularly ethnographic approaches, since these provide rich, contextualised data which, when applied to the study of human variation, can answer important questions which other means have not been adequate to address. My intention is not to suggest that qualitative research is superior to quantitative research for understanding menopause or vice versa. Indeed, I suggest that the two can be used together and that, together, they may be more valuable than the sum of their parts. I have also highlighted in this chapter the fact that research of a high standard has not been applied to understanding menopause among Pakistanis whether living in Britain or elsewhere. The present study aims to fill this lacuna and to avoid the above identified pitfalls by taking a biosocial approach.

In Chapters Four, Five, and Six, the chapters which relate most to this literature review, I test several hypotheses using quantitative data collected for the present study. A detailed statement of hypotheses to be tested will not be included here but instead will be included at the beginnings of the relevant chapters. In Chapters Four and Six I test hypotheses regarding predictors of timing of menopause and hot flush experience and severity, respectively, in a sample of British Pakistani women. In Chapter Five, I explore more carefully the research on menopause symptomatology, reviewing some of the literature to highlight potential problems within it. I also outline the potential for a new approach, and test several hypotheses using the data collected for the present study.

## CHAPTER TWO: REVIEW OF THE ETHNOGRAPHIC LITERATURE ON BRITISH PAKISTANIS

There is a wide range of ethnographic and other social science literature on Pakistan and the transnational communities which have formed in Britain and elsewhere due to Pakistani migration, most of which is beyond the scope of review within this dissertation. As such, this chapter will focus on the considerable body of social research which has been carried out among British Pakistanis<sup>7</sup>, exploring the ideas and practices pertinent to the analyses in this dissertation. It will also focus on previous research carried out in Bradford District and Leeds, including literature from a variety of social science disciplines, since most of the social science research on British Pakistanis in this region was conducted by non-anthropologists. I include major themes in the findings of the earliest ethnographies on Bradford's Pakistani community as well as those other ethnographies of British Pakistanis which are of particular importance. Anthropological work on British Pakistanis has consistently addressed a range of themes which have relevance for this dissertation. These include *biradari*, marriage, kinship, identities (Islamic, sectarian, British, Pakistani, and political), women's roles and modesty, the body (reproduction, health, and hygiene), and racism. I review each of these in turn and chart the historical development of both the migration process and academic thinking about Pakistanis in Britain.

The area in which the present study was carried out in West Yorkshire has a large, now long-standing British South Asian population. In both Bradford and Leeds the majority of British South Asians originate from Mirpur District in *Azad* Kashmir, Pakistan. People of Pakistani origin represent 14.5% of the population of Bradford District (which includes the city of Bradford and its surrounding area), with Indians, Bangladeshis, and other South Asians representing only a further 4.4% (Office of National Statistics 2001a). Additionally, in some wards (such as Manningham, Bradford Moor and Bradford City) Pakistanis represent more than half the population (Darlow et al. 2005). In Leeds, a city about two-thirds larger than Bradford, people of Pakistani origin represent 2.2% of the population (Office of National Statistics 2001b ). In both Leeds and Bradford, people of Pakistani origin represent a larger

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<sup>7</sup> The term British Pakistanis is not ideal but will be used in this dissertation to distinguish between people who identify as Pakistani who live in the UK and those who identify as Pakistani living elsewhere. Not all prefer this term, in my own research only 24.6% (63 out of a total sample of 256) chose it as best fitting them from among South Asian, Pakistan, British Asian, British Pakistani, or British/English.

share of the population than any ethnic group besides White British (Office of National Statistics 2001a, 2001b).

### **Biradari, Marriage, and Kinship**

Much of the distinctiveness of British Pakistanis, in terms of behaviour and outlook, can be introduced via an overview of practices related to marriage and kinship, two domains which are a traditional concern of anthropology. An important and somewhat elusive concept which informs British Pakistani approaches to kinship and marriage is *biradari*, a term which has been understood in different ways by different anthropologists. Despite disagreement over a precise definition, there is an overall consensus about its importance (discussed further in Chapters Four and Six), and, in fact, it has been credited as an underlying cause of much Pakistani migration to the UK.

The first ethnographer of British Pakistanis to address the issue was Saifullah Khan (1977), who described *biradari* as ‘extended kin group’ and talked about the roles it played in life in Bradford. Saifullah Khan identified one’s *biradari* as a source of pressure to conform and adhere to social norms, as well as of support, and noted that while migrant Mirpuris have integrated non-*biradari* members from Mirpur into their social networks, they still relied on fellow *biradari* members for psychological and financial assistance. Indeed, she described the *biradari* as functioning “as a welfare, banking, and advice service” for Mirpuris in Bradford (Saifullah Khan 1979: 45).

Shaw (1988) took up the issue of the relationship between the concepts of caste and *biradari* in her ethnography of British Pakistanis in Oxford, and explained the mechanisms by which *biradaris* are sustained. Drawing in arguments from ethnographies of Pakistan (particularly Punjab) which have addressed this question, including work by Eglar (1960), Ahmad (1977) and Alavi (1972), she suggested that *biradari* has a flexible meaning which is often inter-related with caste. She stated that there was a lack of consensus about what caste is and whether it exists among Pakistanis, though *biradaris* generally bear caste names. Shaw outlined a three-tiered ranking system for castes among Pakistanis, with *ashraf* (noble) castes being the highest. *Zamindar* (landowning) castes are the next highest, with the lowest being *kammi* (artisan) castes. She explained that *biradari* and caste are central to Pakistani social organization and suggests that the meaning of *biradari* is flexible and sometimes refers to all



members of one's caste, sometimes refers to only close patrilineally-related kin who live nearby, sometimes refers to all patrilineally related kin, and other times is more selective, referring only to the kin with whom one is engaged in exchanges of gifts and brides.

Shaw's work also made clear the links between kinship, marriage, and *biradari*. She identified two related practices which help to sustain *biradaris*: *lena-dena* and arranged consanguineous marriage. *Lena-dena*, which literally means 'taking-giving', is the system of reciprocity which operates in many spheres of life, including exchange of gifts, brides, and hospitality. These exchanges reinforce the *biradari* networks since each gift (or other exchange) causes a debt which must be repaid and this (usually small) debt keeps the parties connected to one another. Shaw also explained that *biradari* perpetuates itself through arranged marriage since marriages produce offspring who are members of the *biradari* and *biradaris* continue to be interlinked kinship groups because of first-cousin marriage (though marriages do occur between non-kin and those from different *biradaris*).

Shaw also talked about the functional role of the *biradari* in Pakistan. She explained that, in Pakistan, appeals to the government bureaucracy must be made through influential members of the *biradari*, who become patrons to those in need of help, noting that in Pakistan it is not always effective to attempt to appeal on the basis of justice or rules when problems arise. She described how this template of patronage has been replicated in British Pakistani approaches to power and bureaucracy in the UK. Those Pakistanis in Britain who have managed to gain influence (usually because they appear educated, can speak English and are therefore able to handle bureaucratic matters) are frequently approached for help from members of their *biradaris*, effectively making them patrons. Since these people confine their help to members of their own *biradari*, *biradaris* with more such patrons have had an advantage in the UK.

Werbner (1989, 1990) took a different approach to the concepts of *biradari* and caste by separating the two theoretically. Regarding the latter, she discussed problems in theorising caste among Muslims and the disagreement between Dumont and Barth over this issue. Dumont (1972) argued that Hindu caste is characterised by the priority given to religious power (backed by the notion of purity) over secular power and that among Muslims such ideas are absent, making Muslim caste difficult to characterise. Werbner disagreed with Dumont (1972) that a religious basis for hierarchy is absent in Muslim caste, citing evidence from Barth (1960) and her own study that the top of the caste hierarchy consists of those with

hereditary connections to the Prophet Mohammad (pbuh). Barth's (1960) theorising of caste focused on the conjuncture in caste systems of various kinds of status: those who have high status in one domain (e.g. occupation) have high status in another (e.g. political). Werbner attempted to bring together the sociological (suggested by Barth) and cultural-historical (suggested by Dumont) views of caste within a single theoretical framework which highlights tensions between ideas of equality in Islam and the inequality inherent in the idea of caste.

Werbner argued that the understanding of Punjabi caste, referred to by the term *zat*, has been hindered by misunderstandings of *biradari*. She considered *biradari* to refer to localised units of endogamy within a *zat*, stating that people generally marry those within their caste who are of equal power, wealth, or education. She suggested that extended families can effectively split into separate *biradaris* if they stop intermarrying. However, she also wrote that the term *biradari* is also used to mean all members of the *zat*, or all members of the *zat* from the same region or village and noted that these usages are more common among those with few kin-members in the UK. She also noted that among British Pakistanis *zat* remains important, although it no longer reflects occupation or land ownership.

Werbner described the important role of 'Islamisation' in approaches to *zat*, noting that greater piety and a closer observation of Islamic texts helps some to break away from the *zat*-based definition of status and can facilitate inter-*zat* marriages. Her account agreed with that of Shaw (1988) on the importance of *zat* and other measures of social status (such as social class) in arranging marriages. Werbner provided a five-tiered ranking system for *zats* which is very similar to that of Shaw but which emphasises the link between the lowest *zats* and pollution/impurity (in practice, e.g. eating of pork, and occupation, those who come into contact with faeces). Werbner also emphasised the complexity of British Pakistani social organization in which she says several systems of ranking are combined, the most important of which are *zat*, class, area of residence in the UK, and area of origin in Pakistan. She noted that, while two people may not agree on a precise evaluation of a person's status compared to another's in the combined scheme, there would be agreement on status within any single scheme.

The subject of the marriage practices which predominate among British Pakistanis is one which has attracted attention from the media, politicians, and academic researchers. In particular, transnational arranged marriage continues to be an important practice among British Pakistanis, as many social scientists have noted (Shaw 1988, 2001; Macey 1999b;

Ahmad 2001; Ballard 2002; Charsley 2005, 2006), despite political rhetoric designed to discourage it (see Werbner 2005). These transnational marriages also frequently take place between blood relatives, particularly cousins.

Shaw (2001) argued that the continued popularity of consanguineous arranged marriage among British Pakistanis cannot be explained simply as a cultural preference, and seeks to elucidate the reasons for the persistence of this marriage pattern. Her approach is lent credibility by her finding that first-cousin marriage has increased among some British Pakistani groups from the Punjab, in contrast to the recent trend witnessed in other countries of a decline in consanguineous marriage. She explained this pattern by suggesting that parents seek to maintain their connections with their kin in Pakistan for socio-economic reasons, and that marrying their children to the children of their siblings is a very important signal of continuing connectedness. According to Ballard (2001) this endogamy is a critically important part of the maintenance of transnational networks which many Pakistanis rely on for financial reasons.

Some research has implicated the practice of consanguineous marriage in causing morbidity and mortality among British Pakistanis (Overall 2009; Bunday and Alam 1993). However, the assumptions underpinning these studies have also been challenged (Ahmad 1994). Ahmad has argued that the hypothesis that consanguinity explains higher rates of prenatal mortality and congenital malformations is over-simplistic and is popular because it shifts the blame onto 'deviant' cultures in line with what he sees as racist ideas within the wider society. Shaw has explored genetic risk perception regarding consanguineous marriage and identified problems in how messages about risk are given and received in interactions with genetic counsellors. Shaw (2000a) argued that many factors influence the perception of risk of childbearing within consanguineous marriages, highlighting the importance of this practice for family kinship networks and identity. Shaw and Hurst (2008) found that there was scepticism among British Pakistanis regarding the genetic explanations of illness and that there were alternative theories for these (which are not in line with scientific understandings of genetics) among British Pakistanis.

### **Women's Roles, Modesty, and Isolation**

Most accounts of the lives of British Pakistani women make clear the great importance of their modesty in dress and behaviour for the *izzat* (honour) of the family and *biradari*. The emphasis on modesty is informed by Islamic requirements (most British Pakistanis are Muslim), but the need for modesty in behaviour and dress has also been linked to issues of cultural continuity and symbolism, as will be explored below (as well as in Chapter Seven). The requirements of modesty in Islam have also been seized upon by some for particular attention since they constitute prominent visible symbols of difference in British society.

The practice of *parda* and the associated wearing of modest clothing are recurring themes in many ethnographic accounts about British Pakistani women, including in some of the first research on Pakistanis in Bradford. Z. Dahya (1965) explored the practice of *parda* and considers the role of modest clothing in British Pakistani society, in particular the *burqa* (a cloak which covers from head to foot, obscuring the face). She described *parda* as seclusion of post-pubescent women from all men who are not close kin (either by birth or marriage) and emphasized the importance of *parda* as more than a religious practice, arguing that it is “an integral part of the social organisation”. She went on to elaborate on its inter-relationship with family and kin roles and relationships, noting that *parda* is “one of the most important means of expressing and acquiring *izzat*” (1965: 316-317). The *izzat* (honour) of the family often determines the opportunities available to its members, for example, it is a central part of the decision-making process in arranging marriages for the elders to determine the *izzat* of the other family, and is largely dependent on the behaviour of the women of the family. Thus, issues of female modesty and behaviour are important for the family as a whole. Indeed, Z. Dahya noted that a man can quickly raise his status and his *izzat* (honour) by clothing his wife, sisters, and daughters in *burqas*. As noted in Saifullah Khan’s (1976) early study of British Pakistanis, the practice of *parda*, in addition to being a sign of modesty and a source of *izzat*, is also associated with high status families, especially rich and aristocratic families, which could afford for women to be non-productive economically, though there is some question as to how much this association is borne out in reality. Both Z. Dahya and Saifullah Khan noted the relative absence of the *burqa* in Britain, although *parda* continued to be observed. Both pointed out that in Britain this meant the almost complete avoidance of men by women since few women at the time (1960s and 70s) had male kin in the country. Z. Dahya raised concerns that the practice of *parda* contributes to the isolation of Pakistani wives in Britain, noting that Pakistani women in Britain at the time of her study rarely ever met other women or left their houses. Saifullah Khan’s (1974, 1977) work also described the

social isolation experienced by British Pakistani women in Bradford at that time due to observance of *parda*, noting that women did not attend mosques, that there were no other meeting places, and that many women initially felt intimidated by going out because of their lack of language skills. She described women's attempts to meet other women and get involved in extra-domestic life by taking up factory work, particularly sewing, and their attempts to negotiate with husbands to allow this despite the latter's preference for them to stay in the home.

More recent ethnographers have expanded on the foundations provided by the early work outlined above. Notably, Werbner (1990) considered the importance of friendship for British Pakistanis, and explores the role of status in causing isolation. She argued that friendship has proven very important for migrants who establish ties on many different levels with their friends, who are at the same time workmates, neighbours, business partners, lenders, and co-participants in religious rituals and ceremonial exchanges. In general, these relations are characterised by reciprocity, and restricted to equals in wealth and status (with women adopting the status of their husbands). She explained that status may therefore contribute to some women's isolation, since women may not be able to befriend their neighbours if they are very different in status (discussed further in Chapters Four and Six). She also argued that Saifullah Khan's (1974) account of isolation remains true of women in the situations Saifullah Khan described (who were without kin living in the area and recently arrived and young, or who had small children) but that some women moved toward greater independence, particularly once their children were school-aged, allowing more sociability and freedom to visit other women in the neighbourhood.

While some authors (above) have emphasized the negative influence of migration in women's lives (e.g. in contributing to isolation), Shaw (1988) argued that migration has also had an empowering influence on women, allowing many women greater control over their lives, because, in the UK, they often live separately from their mothers-in-law and have greater control of the household. She emphasized the agency in the early migration of women who in some cases arranged their own migration to the UK in order to follow up on husbands or fiancées who were suspected of straying while working in the UK. This focus on women's agency represents a shift in focus from earlier ethnographies.

Some authors, such as Yuval Davis and Jacobson, have suggested that the minority status of British Pakistanis may have increased the level of expectation on women to live in

accordance with their social roles. Yuval Davis (1997) has argued that, among Pakistanis, women's behaviour and dress are key sites for ethnic identity expression as women are expected to symbolise and reproduce the cultural identity. She further suggests that this is heightened where Pakistanis are a minority, leading to a greater desire for men of the same ethnicity to control women. Jacobson (1998) largely concurred with Yuval Davis, and argued that the sense that transgression of boundaries by young British Pakistani females threatens the values and survival of the community has encouraged their young male counterparts to support parents in their imposition of greater restrictions on these young women. Jacobson emphasized that the importance of boundary transgression is related to the community rather than just the family in isolation, noting that it appears that "boundaries are transgressed only where evidence of the breach becomes visible because of gossip" (1998: 64). Yuval Davis argued that multiculturalism has come to collude with these gender-based inequalities. She cited examples of this collusion, including a case in which a claim for asylum in the UK by an Iranian woman facing violence for refusal to wear the *hijab* was rejected by a judge on the basis that veiling was part of the woman's culture, and blames an essentialised view of ethnic minorities for such injustices.

Modesty, and the wider issue of the roles of British Pakistani women, has been a continuing point of reference for the wider society's attitudes toward, and understanding of, British Pakistanis. The *hijab*, in particular, has been increasingly written about by social scientists and others. Elevated from the role of a single article of clothing little mentioned in early ethnographic accounts of British Pakistanis (since they did not often wear the *hijab*), it has become a central topic in the debate over multiculturalism and the discussion of Islamophobia (in part because of the French ban on wearing of the *hijab* in state schools). Werbner (2005) has pointed out that, though the wearing of *hijab* is not considered a threat to British national identity (in contrast to the French case), it has been politicised, and is now the subject of media debate and political speeches. Werbner has argued convincingly that much of the media debate over the *hijab* casts Pakistani Muslim women as victims of male domination, whereas in fact they are often "assertive and authoritative" (2005:36). Afshar, Aitken, and Franks (2006) also pointed out that there is an incorrect assumption among non-Muslims that wearing the *hijab* is a symbol of endorsement of Islamist political views. They also pointed out that wearing *hijab* is often a choice of younger British Pakistani women who pair it with non-traditional clothing (such as jeans and loose t-shirts). These young women are influenced by western ideas of individualism and come from families

which do not require *parda* or insist that their hair be covered. Furthermore, some of these *hijaab*-wearing women considered it their daughters' decisions whether or not to wear the *hijaab* and the study found that some women who had worn the *hijaab* when interviewed in the 1980s had changed their minds and discarded it of their own choice by the time they were interviewed in 2000. Like other studies (Shaw 1988; Werbner 2005; Husband 1999), Afshar, Aitken, and Franks's study found that young women used their textual understanding of Islam gained in Britain to challenge the restrictions and obligations placed on them by their elders.

As Werbner (2005) explained, the meaning of the *hijaab* differs across situations and for different women: some may wear it simply as a personal religious requirement, a symbol of independence from one's elders, or as a symbol of defiance against a society perceived to be hostile to Islam. Werbner argued that, for most British Pakistanis, wearing the *hijaab* cannot be understood separately from concepts like *izzat* (honour) and *sharam* (modesty, shame, or shyness about the body, considered a desirable quality, discussed further in Chapter Seven). However, she pointed out that terms like *izzat* are possibly too broad to be of analytical utility, since *izzat* in particular refers also to personal reputation, symbolic capital gained from one's generosity, and the status of one's kinship or caste group.

### **The Body: Reproduction, Health, and Hygiene**

Few ethnographers have dealt extensively with British Pakistani ideas of the body, although these concepts are essential for understanding their beliefs and customs regarding hygiene and reproduction (discussed in Chapter Seven). Shaw (2000b) noted that there are a range of ways of approaching and understanding health and illness among British Pakistanis including western allopathic medicine, homeopathy, *unani-tibb* (a traditional Greco-Arab system of medicine), and *desi ylj* (traditional 'home' remedies) and that people often combine treatments from different systems to treat a single condition. Accordingly, Shaw explained that British Pakistanis use GPs, unlicensed doctors, *hakims* (practitioners of *unani* medicine), traditional midwives, and *pirs* who all approach the body and health somewhat differently. The role of *pirs* is particularly important for understanding some Pakistani health behaviours. *Pirs* are holy people who are believed to have super-human qualities and the ability to give out charms called *taweez* which consist of words of the *Qur'an* and can be worn as an amulet

or taken as a potion. Belief in the spiritual power of *pirs* is not universal among Pakistanis, rather it is more common among followers of in *Barelwi* Islam and Sufism.

Werbner (1990) explained the centrality of *unani-tibb* beliefs about the ‘hot’ and ‘cold’ properties of substances for Pakistanis’ beliefs about reproduction, which she refers to as the ‘the thermodynamic theory of reproduction’. According to Werbner, among Pakistanis, sexual intercourse is considered a ‘hot’ activity in the *unani-tibb* system. In this system, a man’s semen, known as his *mani* (his reproductive substance) or *bij* (seed), is considered ‘hot’, like other kinds of seeds, whereas a woman’s *mani* (her reproductive substance) is described as like water (‘cold’) or milk (intermediate in the hot/cold system). Conception is understood to occur when the man’s *mani* and the woman’s *mani* come together in sexual intercourse. The hot *mani* of the man and the cold/intermediate *mani* of the woman combine in the womb to create a pregnancy which is ‘hot’ (since the man’s *mani* is stronger than the woman’s *mani*). This ‘hot’ property has the potential to pollute, according to Werbner, which explains why *ghusl* (washing the whole body with water, which is ‘cold’) after sexual intercourse, as required in Islam, can restore purity.

Shaw (1988) addressed the idea of ritual pollution and hygiene practices in greater depth in her ethnography. She described the bathrooms/toilets of rural Pakistani and British Pakistani households, pointing out that in rural Pakistan there are often not indoor toilets or porcelain toilets as there have been in Britain in recent years, but that there is otherwise continuity in hygiene practices between the two contexts. Urination and defecation are considered by Pakistanis and other Muslims to be minor pollutions and cleanliness can be re-established by washing with the left hand and clean water, usually poured from a *lota*, which is a jug or pot designed for this purpose. Major pollutions, including menstruation, childbirth, and sexual intercourse, require *ghusl* to be carried out, in which the genitals and anus are washed with soap by hand and the whole body is washed in running water, in order to restore a state of purity. In addition, *wuzu* (ritual ablutions) which involve washing the hands, feet, and face with water before each *namaz* (the five daily prayers) must be carried out if there has been any pollution since the last prayer was performed.

### **Issues of Identity**



Understanding how people think of themselves is a key to understanding behaviour and has special relevance to minority ethnic communities where identity intersects with visible difference and inequality. There appear to have been several shifts in how Pakistanis in Britain think of themselves, as well as in how academic researchers and the rest of British society think of them. These shifts have accompanied important events which have taken place since the first immigrants from South Asia arrived (such as Partition, the Rushdie Affair, the Bradford Riots, and the attacks on London on July 7, 2005). Identity issues continue to be critical in understanding the social context in which British Pakistani attitudes and practices must be understood (as discussed in Chapter Seven). Much of the research on this issue deals with the extent to which British Pakistanis identify as 'Black', 'Muslim', 'Pakistani', or 'British'.

B. Dahya (1974) noted that originally immigrants from South Asia typically lived in shared accommodation, with little regard for religious and regional differences. He explained that the first shift occurred after 1947, when Indo-Pakistani immigrants began to separate along national, and later regional, sectarian, and kin-group or *biradari* lines. Several authors have marked the arrival of wives and children in the 1960s as an event which made the maintenance of an ethnic identity especially important (Lewis 1994; Shaw 1988; Dahya 1974). According to B. Dahya, Pakistanis chose to stay in predominantly Asian neighbourhoods when their families arrived, in order to remain loyal to their ethnic identity by continuing to patronise Pakistani businesses, which he considered a key process by which ethnicity is maintained. Z. Dahya (1965) described the importance of clothing, jewellery, and other outward signals of insider vs. outsider among the Pakistani immigrant women in Bradford, even in this very early period, making clear that identity boundaries had already been established between the white British majority and South Asians. B. Dahya (1974) put blame on what he called 'ethnic entrepreneurs' for promoting conservatism and anti-acculturation sentiment in order to perpetuate the ethnicity of the immigrants and thereby ensure a continued need for ethnic businesses, particularly Pakistani grocery shops and butchers. B. Dahya (1974) also noted that Pakistani ethnicity was mobilized for political purposes. An early example of this occurred in Bradford in 1971 when the local mosque committee<sup>8</sup> is said to have determined the outcome of a local election by advising Pakistanis

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<sup>8</sup> A mosque committee is the organization which runs a mosque, raises money to build and fund it, appoints the imam of the mosque, and organizes any classes which are taught within it.

to vote conservative since Labour had put up a Bangladeshi candidate, very shortly after Bangladesh (formerly East Pakistan) had become independent of Pakistan.

Other authors have criticised B. Dahya's treatment of Pakistani ethnicity, arguing that he incorrectly portrays it as monolithic (Saifullah Khan 1976; Barot 1988). Saifullah Khan (1976) suggested that the idea of 'Pakistani ethnicity' used by B. Dahya (1974) disguises the great heterogeneity among Pakistanis in terms of class, ethnic, and religious differences, but suspects that the awareness among Pakistanis in Britain that they are conceived of in this way may lead to the development of a greater sense of common identity over time. This view of ethnicity allows for its social constructedness, in agreement with Barth (1969). In line with this, Werbner (1990) argued that ethnicity is not static, but rather a process, hence rather than 'being', an ethnic group is continually 'becoming'. Werbner explained that part of this consists in the group socially reproducing itself, which, among Pakistanis, is largely achieved through gift exchange. Werbner argued that gifts are explicit objectifications of social relationships between Pakistanis and that the flow of gifts, capital, and marriage partners between Pakistanis (both from Pakistan to the UK and vice versa) constitutes 'ethnic renewal'.

Several scholars have documented what appears to be a recent resurgence in Islamic identities among British Pakistanis (Lewis 1994; Husband 1999; Alam and Husband 2006; Jacobson 1998; Shaw 2000b) along with a re-assertion of intra-Islamic distinctions including sectarian divisions, as the Pakistani Muslim population has grown (Lewis 1994; Marccini 2005). Shaw (1994) has argued that identification with the *ummah*, the worldwide community of Muslims, has replaced the 'myth of return' for British Pakistanis as the reason to maintain distinctiveness and resist acculturation. Rather than thinking of life in Britain as a temporary condition (the 'myth of return') and therefore something that should not interfere with identity, it has been largely accepted as a permanent situation and a greater emphasis has been placed on a non-geographically based Muslim identity. This shift has also been accompanied by a loss of a once-prevalent 'black' ethnic identity which South Asians shared with other non-white ethnic minorities in Britain (Ramamurthy 2006; McLoughlin 2006), that was part of a political alignment of those experiencing racist discrimination and violence both by the state (particularly the police) and by organizations such as the National Front (Ramamurthy 2006; McLoughlin 2006). 'Black' ethnic identities appear to have been a casualty of the 'Islamisation' of British Muslims in the wake of events such as the 'Rushdie Affair' (as the controversy surrounding the publication of Salman Rushdie's The Satanic

Verses was termed) which placed Muslims under harsh scrutiny and “hostile stereotyping” (Husband 1999: 93).

Samad’s (1992) paper about the Rushdie affair brought an important historical dimension to understanding the events in Bradford and explained how Bradford became the centre of both protest and media attention on this issue (when some book-burning took place in Bolton as well). Samad’s analysis is also valuable for a contextualised understanding of British Pakistani identity in Bradford. Samad pointed out that Islam was not united in its opposition to The Satanic Verses, as Saudi Arabia rescinded its *fatwa*<sup>9</sup> against the book, and outlines the prior ‘*halal* meat controversy’ and the ‘Honeyford Affair’ to explain the context in which Rushdie’s book became the focus of so much energy. Both the ‘*halal* meat controversy’ and the ‘Honeyford Affair’ raised issues around provision for minority students in Bradford’s schools. The ‘*halal* meat controversy’ concerned provision of acceptable meals for Muslim students in state schools; while the ‘Honeyford Affair’ was a result of the local headmaster, Ray Honeyford, having written articles which criticised the anti-racist and multicultural policies in British schools. Both issues mobilised broad involvement from the public (including non-Muslim South Asians, anti-racist whites, the Bradford Council for Mosques, and the Bradford Asian Youth Movement) to campaign for provision of *halal* food in schools and the dismissal of Honeyford respectively. However, in both cases there had been competition for publicity between the secular Asian Youth Movement and the religious Bradford Council for Mosques. The Asian Youth Movement were important proponents of the ‘Black’ political identity in Bradford (Ramamurthy 2006), whereas the Bradford Council for Mosques took up issues in order to advocate for Bradford’s Pakistanis as Muslims. In the matter of Rushdie’s book, the Bradford Council for Mosques championed the issue and local *pirs* (holy men) became involved, which motivated Sunni Muslims from the *Barelwi* sect to become involved, thus raising the profile of the issue, Bradford Council for Mosques, and the idea of British Muslim identity. Samad (1992) also argued that the youths involved in book burning and other events did not become more religious as a result of the Rushdie affair. Instead, he suggested that they were in effect using the discourse and symbols of Islam to express their discontent with the wider society.

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<sup>9</sup> A fatwa is a legal pronouncement based on Islamic law made by an Islamic scholar. It is not considered binding in Sunni Islam, though it is considered binding in certain cases in Shia Islam. It is not a declaration of war or a death order.

Werbner's (1997) analysis of the 'Rushdie Affair', using the concepts of a moral panic and essentialism, also helps to explain the recent shift in British Pakistani identity. Moral panic, a term coined by Cohen (1972), is a state in which social contradictions create a sense of a profound threat, a threat which may seem apocalyptic. Werbner traced a series of moral panics which led to the Rushdie Affair. First, she argued that British and American imperialism led to the Shah of Iran's attack on personal freedoms and Islamic identity in Iran, which in turn led to the moral panic which sparked the Iranian Revolution. According to Werbner, this then led to a moral panic among secular Muslim intellectuals, including Salman Rushdie, who feared that civil liberties in their own countries of origin were under threat (in Rushdie's case, India/Pakistan). Rushdie's novel The Satanic Verses emerged from this fear and sparked a moral panic among Muslims, particularly those who already felt under threat, such as British Pakistani Muslims who were experiencing racial abuse and discrimination. Werbner argued that the response of these British Pakistanis, particularly the event in Bradford, triggered an opposing moral panic among British and western people who essentialised British Muslims as a threat to the nation, freedom, and their physical safety. Finally, according to Werbner, British Muslims in turn essentialised the wider society as hostile to their religion and indifferent to their concerns and their suffering. This perception also appears to have been exacerbated by a sense of controversy around issues such as forced marriage and the rioting and public disturbances which occurred in Bradford in 1995 and 2001, culminating in "a strong sense of having been subject to national scrutiny and abuse" (Bradford Commission 1996).

Work on identities has also turned up generational differences in the extent to which British Pakistanis consider themselves 'Muslim' or 'Pakistani' (Husband 1999), and has indicated that experience of racism and rejection play an important role in many British Pakistanis rejection of 'British' identity (Wardak 2000; Alam and Husband 2006). Several authors have suggested that identifying as Muslim is more common among younger British Pakistanis and is not necessarily indicative of greater religiosity but of a transformation of ethnic identity and a more personal approach to religious identity (Jacobson 1998; Husband 1999; Alam and Husband 2006). Bolognani (2007b) has explored British Pakistani attitudes to return to Pakistan and their experiences of visiting Pakistan and has found a re-invigoration of the 'myth of return' among British Pakistani youth (the second and third generations) in whom this is related to perceptions of racism and Islamophobia. Jacobson (1998) has noted that many were ambivalent about their Britishness, had hybrid identities, and were capable of

‘code switching’ from situation to situation, a skill which Ballard (1994) also suggested that young British Asians possess. Hussain and Bagguley (2005) have suggested that the British-born Pakistanis use their identities as British citizens as a resource against the British National Party (BNP) but that they often do not see themselves as British in the conventional sense of national identity. They find that migrants (the first generation) express what they call ‘denizen’ identities, rather than ‘citizen identities’, still fear deportation, and feel they do not have the rights of full citizenship in the way their children do.

### **Racism**

The role that racism plays in the lives of British Pakistanis has been the focus of much research since the early period of migration, most of which has been carried out by non-anthropologists. Experiences of racism and Islamophobia have been an important part of shaping British Pakistani identities, as mentioned above, and have also been implicated in producing poor health outcomes for Pakistanis in Britain (further discussed in Chapters Four, Seven, and Eight), although a question remains over whether the impact of racism may have been overestimated by some commentators.

A considerable body of ethnographic work has demonstrated convincingly that racism plays a significant role in British Pakistani life. Z. Dahya’s (1965) reporting of her experience of racism in Bradford is an exception among early accounts, which tended to avoid the issue in favour of focusing on more general tensions between British Pakistanis and other Britons. Z. Dahya (1965) described her experience of having been discriminated against by shop assistants in Bradford while shopping with a Pakistani family as part of participant-observation. Of the recent literature, a key ethnographic study by Bowler (1993) found negative stereotyping of South Asian patients (most of whom were Pakistani) by midwives. This has been followed by several other studies which have explored and exposed institutional racism, particularly in the health service (Bowes and Domokos 1996; Bowes and Domokos 1998; McKenzie and Bhui 2007; Fazil et al. 2002).

Of particular interest for the current study are the authors who have tried to analyse the effect of racism in shaping particular aspects of British Pakistani life. A considerable amount of debate centres around the influence of racism on housing patterns (Bowes, Dar, and Sim 1997a, 1997b; Peach 1998; Harrison and Philips 2003; Phillips 2006; Stillwell and Phillips

2006) beginning in Bradford with Rex and Moore's (1967) suggestion that the high concentration of Pakistani immigrants in particular urban, low-rent areas was due to racial discrimination preventing Pakistanis from taking out mortgages and thereby acquiring nicer and newer houses in more suburban areas. B. Dayha (1974) tackled the claim that racism fully explains the clustering of Pakistani households in such areas, drawing on long-term ethnographic data collection beginning in the 1950s and 60s to address questions of housing segregation in Bradford and Birmingham, in response to the questionnaire-based sociological study by Rex and Moore. B. Dahya pointed out that Rex and Moore had assumed Pakistanis to have the same values and preferences as both the 'native' (white British) proletariat and other immigrant groups, and had not considered the perceptions and intentions of the Pakistani immigrants themselves. In contrast, B. Dahya explicitly approached the topic of housing choices from the perspective of the migrants and presented his own findings drawing on his own knowledge of circumstances in Pakistan and in Mirpur District in particular. B. Dahya argued that the housing situations of British Pakistanis fit their perceptions, desires, and intentions as people who did not see themselves as settlers in need of high quality accommodation in the UK and instead had the intention to return to Pakistan once they had saved enough money (the aforementioned 'myth of return'), since the aim of migration was not to seek a better life while in Britain but rather to improve their quality of life when they return to Pakistan, and the quality of life of their families in the meantime by sending remittances.

B. Dahya's explanation has been criticised for underestimating the effect of structural factors like racism and for 'blaming' the culture of the immigrants for segregation (McLoughlin 2006), and 'stereotyping' South Asians (Lawrence 1982). McLoughlin (2006) in particular seems to have objected to the suggestion that structure does not fully explain segregation in Bradford. B. Dahya's work is a significant contribution, in particular because it highlights the importance of understanding historical developments, as well as the need to consider British Pakistanis' own priorities and preferences over assumptions about how structural constraints like racism influence people. More recent work in Leeds and Bradford has suggested that British Asians are influenced by a number of factors in making housing choices including perceptions and experiences of racism but also age, gender, ethnicity/religion, social class, and events such as the public disturbances in Bradford and the attacks on London in 2005 (which involved British Pakistani men from Leeds) (Phillips, Davis and Ratcliffe 2007).

Saifullah Khan (1977; 1979) highlighted racism as a force which has contributed towards shaping the lives of Bradford's Mirpuris. She argued (1979) that Mirpuris in Bradford are socially conservative because they are an insecure minority in Britain, politically and culturally under threat from the (white British) majority society. Saifullah Khan (1977) also related this to the 'myth of return': Mirpuri migrants who found themselves in an inferior position in British society because of racism wanted to return to their villages, in line with their original plans, but upon returning discovered that their own standards of living had changed and that the continuing prosperity of the family depended on their return to Britain. She said the migrants thus became dependent upon both worlds, one which was required to achieve the economic advancement (Britain) and the other being the place in which successes could be recognised (Pakistan). In Mirpur, the money earned in Bradford could move one up the social ladder by making it possible to engage in elaborate gift exchange, buying of land, and building of houses. Thus, migration does not move one off the traditional social ladder and onto a new one (Saifullah Khan 1977). Saifullah Khan (1977) also explained the emergence of tensions between immigrant Mirpuris in Bradford and the wider society with reference to anti-immigration sentiments, the actions of the National Front, and mutual stereotyping. She pointed to the potential for both intergenerational conflict and conflict with the wider society, in part because of the focus on individuality in British society which she expected to influence the second generation who would be educated in Britain. Saifullah Khan saw this focus on individuality as being at odds with the values of the first generation and at odds with acceptance of the prejudices against South Asians in the wider society.

While she clearly deals with broad impacts of racism, Saifullah Khan's work has been criticised by McLoughlin (2006) as having left out political events of the time, specifically not mentioning the Yorkshire Campaign to Stop Immigration or the National Front which he said de-politicizes the ethnography. However, Saifullah Khan (1979) did discuss the stressful effects of the speeches of Enoch Powell, the demonstrations by the National Front, and the personal experience of discrimination. In the same vein, others have criticised the ethnographic work done among British Pakistanis for having left out responses to racism, both political and personal (Akber 1993; Hutnyk 2005).

Some have perceived a shift in the form of racism directed at British Pakistanis, which in some ways parallels the shift in identities discussed above. There appears to have been a move from a racism based on physiological markers of difference (analogous to 'blackness')

from the white British majority to one which targets cultural and religious differences between the majority population and British Pakistanis, particularly focusing on Islam (Alam and Husband 2006; Sheridan 2006; Poynting and Mason 2007; Modood 1997). Modood (1997) has argued that what is referred to as a 'new' culturalist racism focusing on cultural differences which is thought to replace 'old' biological racism is not new and includes Europe's oldest forms of racism, anti-Semitism and Islamophobia. Modood (1997) argued that anti-racist movements have moved between two somewhat contradictory positions as they have said that there are no differences between whites and non-whites but also said that colour and culture are important, should be a source of pride and that non-whites should unite on the basis of their 'colouredness'.

### **Conclusion**

The topics in this review are important for the analyses in this dissertation, the most important of which are *biradari*, *izzat*, social status, ideas about the body and hygiene, tensions between British Pakistanis and other Britons, and the background of events in the history of Bradford which have drawn attention to its British Pakistani community. Throughout this review it has become apparent that while much research about British Pakistanis has been carried out in Bradford, this is contrasted with a lack of attention given to Leeds (the few exceptions include quite recent social geography work by Stillwell and Phillips 2006 and Phillips, Davis and Ratcliffe 2007).

Two important themes in particular emerge from this literature. The first theme is the persistence of the importance of practices that support kinship and social hierarchies, though this persistence does not imply that British Pakistani social life is static. The second theme is the change in priorities and identities of British Pakistanis. These changes appear to be related to staying in Britain, both the decision to stay longer than the first migrants anticipated, and the effects which accompanied long-term contact with the wider British society. Young British Pakistanis are not as different from their parents as early researchers predicted they would be, but the degree to which this is out of a desire to maintain their sense of distinctiveness, their ethnic identity, on its own, and the degree to which this has been influenced by a sense of rejection and hostility from the wider society, is not entirely clear.



Overall, the literature reviewed in this chapter clearly points to change over time in the social environment of British Pakistani life as a result of staying in Britain. While we would also expect that a change in some aspects of the physical, nutritional, and biotic environment would be reflected in the physiology of British Pakistanis as a result of living in the UK, and indeed some biological changes have been found (Pollard et al. 2009; 2008; 2006), there has been little research into the interrelationship between the biological and social factors. The next chapter (Chapter Three) describes in detail the way that the present study aims to investigate the relationship between social and biological factors relating to menopause.

## CHAPTER THREE: METHODS

This chapter outlines the overall perspective of the present study, the epistemological and ontological approaches it takes, and the methods of recruitment, data collection, and data analysis used. It also provides a discussion of ethical considerations relevant to this study and a reflexive account of my role as a researcher.

### **A Biosocial Perspective, Epistemological, and Ontological Approaches**

This research is best described as taking a biosocial perspective. This perspective employs an integrated approach appropriate to tackling questions which are not readily categorized as “purely” biological or strictly social. In this research, the human body is conceived of in scientific realist terms, as a biological entity. This contrasts with some research which rejects the reality or biology of the human body (cf Edwards, Ashmore, and Potter 1995; Synnott 1992; Grosz 1994).

While I use scientific realism as an approach to knowledge about the biological body; I apply an interpretivist epistemological approach to the social world. This strategy is based on two assumptions: firstly, that the body has an underlying reality separate from the understandings and beliefs of actors; secondly, that the discourses and meanings of actors influence the body, via behaviour and emotional/perceptual experience of life (e.g. stress). While I hold that the elements of the social world are in a constant process of construction by actors (constructionist ontology), I do not extend this radically to the physical world as some have. While the body is influenced and shaped by the social world, this occurs indirectly: via behaviour, lifestyle, one’s choices, one’s emotions, and what is done to one.

While it seems obvious that our ideas about and perceptions of our bodies are shaped by social and cultural processes (including science) through which we learn about and experience our bodies, it is also true that even the most physical and material aspects of our bodies are inextricably linked to the social world in which we live. An illustrative example is the fact that social status plays a major role in determining diet (macronutrient and micronutrient content) (Gray and Leyland 2008; Darmon and Drewnowski 2008; Fehily, Phillips, and Yarnell 1984) which determines the mineral content of our bones (Schutkowski

1995; White 2005), the extent to which our genetic potential for growth can be realised (Bustos et al. 2001; Kikafunda et al. 1998; Martorell et al. 1988), and our body composition from the womb onward (Griffiths et al. 2008; Neel and Alvarez 1991; Gazzaniga and Burns 1993). In this sense social life determines the form and material from which we are physically formed as well as how we view that formation.

As Guarnaccia suggests, the body is ‘both a biological system and the product of social and cultural processes,’ and therefore in a sense simultaneously “totally biological and totally cultural” (2001:424). Indeed, far from saying there is nothing non-cultural or non-social about humans or that the social is the only influence on our material existence, there is much evidence that we are also the product of our distant evolutionary past and microevolutionary processes which continue to occur. I would suggest however, that, as Dressler (1995:31) points out,

attempting to examine processes involving human behavior and human biology without taking local systems of meaning into account in terms of how basic variables are manifest, or of how those systems of meaning may modify relationships among variables, is going to result, not in negative findings, but worse, in findings of *dubious value and uncertain relevance* [emphasis in original].

Understanding what I refer to here as the social world is a complex task which I have undertaken for this study using ethnographic methods. My use of ethnographic methods serves two purposes: (1) to illuminate the meaning and logic of local norms and practices according to those participating in them, (2) to complement the biological aspects of this inquiry by taking systems of meaning into account in the way Dressler indicates is required.

Where I have dealt with the social world and non-biological views of the human body, I have used a constructionist ontology and an interpretivist epistemology, since I would maintain that understanding the social world is not possible through the same approaches as the natural world. I am concerned in large part with meaning and the accounts of persons from their own perspectives and I see social categories as constructed. I see social norms as “much less like commands, and much more like general understandings” (Strauss et al. 1973: 308), but also accept that social norms and categories have a persistent, though not entirely static, reality that influences people’s perspectives and behaviours. This is very similar to the perspective of Bourdieu (1977) reflected in his use of the concept of habitus.

Though I take the view that an understanding of subjective meaning is essential in explaining people’s behaviour, attitudes, and beliefs, I also maintain that there are some influences on

people which may not have meaning for them, such as structural forces or aspects of their biology. However, I am skeptical about outsiders' attempts to suggest explanations for behaviour which are totally apart from and take no account of the conceptions of people themselves. The ethnographic approach I have taken fits with these principles.

Similarly, where I have dealt with impacts on the biological body (e.g. timing of menopause, hot flush prediction) I have used scientific realist epistemology, inductive reasoning, and quantitative methods including anthropometry and inferential statistics. In interpreting and discussing the results of the quantitative analyses, I have used both the biologically focused literature on menopause, which helped to produce the hypotheses I test, and the results of qualitative data collected and analysed using the appropriate complementary approach (described below). My use of qualitative data in the interpretation of quantitative results is meant to contribute to an iterative process in which quantitative data are interpreted in the light of qualitative findings, before in turn leading to more finely tuned quantitative and qualitative data collection (in future studies). It is hoped that questions surrounding the biological and social mechanisms which underlie relationships should be answered by such an iterative process.

### **Approach to the population**

This study aims not to essentialise the group under study. It does not require there to be one community of British Pakistanis, nor a single set of beliefs, nor one common narrative, and does not gloss over conflicting accounts and ideas. Furthermore, the study does not require that these women differ dramatically from their counterparts in Britain who identify as Indian (including Sikhs, Hindus, Christians, and Muslims) or Bangladeshi. Rather the study aims to understand some of the commonalities and differences among women who identify as Pakistani (a category that is meaningful to people living in Bradford), and what relationship these have to reproductive ageing and health.

It was acknowledged from the outset that women might have other ways in which they prefer to self-identify. However, all participants did consider themselves to be Pakistani, although this was more meaningful to some than others. This category has been used in the research literature on ethnicity and health in the UK which has shown that health status of Pakistanis is not the same as that of Indians or Bangladeshis but is intermediate, with Indians showing

better health outcomes and Bangladeshis showing worse health outcomes (Bhopal et al. 1999; Nazroo 2003; Cooper 2002; Department of Health 2001, 2005). The category is not treated as a gloss for Muslim, though nearly all of the women who participated in the study would identify as Muslim. The approach to religion taken in this study is non-textual, meaning I have not gone to religious texts to determine what beliefs Muslim women have but rather have gone to Muslim women and asked about their beliefs. Thus, I have not privileged one 'official' version of Islam, but sought to examine religious traditions, practices, and discourses which are evident in the narratives and actions of the women in the study.

### **Recruitment of participants**

Women identifying as Pakistani, aged approximately 40-60 years living in the Leeds/Bradford area of West Yorkshire, were recruited with the help of local community contacts, interpreters, and health development workers and via snowball sampling. The recruitment included several sites (listed below), making the study multi-site in nature. While this was very helpful in increasing the number of eligible women for the study, it also enabled me to follow the personal connections of participants/informants across city or council boundaries to other areas of West Yorkshire, including Huddersfield and Halifax (towns 10-20 miles from Leeds and Bradford). However, more than half of the interviews were carried out with women living in a single 'village' within the boundaries of Bradford District: Keighley.

The age range for recruitment was originally 40-60 years. A major consideration in setting the upper limit at 60 years was to avoid relying very heavily on recall in a population which, if it is like corresponding populations in Pakistan (Adhi et al. 2007; Yahya and Rehan 2002; Baig and Karim 2006; Wasti et al. 1993), might experience an earlier menopause than that of white British women (McKinlay, Jeffreys, and Thompson 1972; NHS 2008). The wide age range also served to make recruitment easier as trying to find women only in a narrow band of ages would have been more difficult and the precise number of eligible women in the area in this age range was not calculable from data released by the Office of National Statistics. However, many women did not know their exact dates of birth and many others reported that they were born on the first of January in a particular year, a date of birth commonly given when the real date is not known among Pakistanis in the UK (Bowler 1993). The issue of establishing date of birth was difficult and it sometimes took half the interview to establish

the participant's current age (see below in the section Methods for collecting and using dates and ages). As a result, women who might have been just slightly too young or too old for the original age range were not excluded.

Previous studies have shown that recruitment through personal contacts and then through snowballing are the most effective methods of recruiting research participants from this population (as opposed to recruitment via media campaigns or postal letters) (McLean and Campbell 2003). This was indeed the most successful method of recruitment in my experience. In addition, I conducted health promotion sessions with the cooperation of local community centres and provided local women with reproductive health information as well as an introduction to the project. Women who were interested in participating were given either my contact information or that of the interpreter. The participant then contacted one of us to arrange a meeting time for data collection. This method of recruitment was moderately successful but less so than recruitment via personal contacts and snowballing.

Interviews were conducted in the participant's home in most cases, but some were carried out at one of the community centres where only women attended. All components of the research including the consent procedures were offered either in English or in a South Asian language with which women felt more comfortable (Urdu, Punjabi, Pashto, Mirpuri, or Hindko). I have limited conversational skills in Urdu and Punjabi, and a female South Asian interpreter was available throughout data collection when needed.

The overall effect of using interpreters in the project was very positive as it made it possible to interview a far wider (and more representative) range of women than could be interviewed in English (the issue of the effect of interpreters on the study is taken up in more detail in the final section of this chapter). It also allowed women to speak in their first language if that was more comfortable for them, which was particularly important for the life history interviews. However, while carrying out the interviews I could not always be sure how precisely the interpreters were translating what women were saying, which is a risk in any research relying on interpreters. In order to check the faithfulness of interpretation, I made sure that the whole interview was digitally recorded so that I could selectively check later with the help of a third party fluent in both English and the language in which the interviewee was speaking. I have checked short sections from different interviews with different interpreters by asking a third party to carry out a word-for-word translation of what is being said. It appears that, although the interpreting was not as detailed as a word-for-word

translation, the differences between word-for-word translations and what the interpreters said appear to have been mainly cases of the interpreter leaving repeated information untranslated or omitting seemingly irrelevant content (e.g. when the interviewee started asking about the health of family members of the interpreter).

## **Data Collection**

### **Quantitative Data Collection**

There were two forms of quantitative data collection in the current study: questionnaire-based interviews and anthropometry. Both were briefly piloted during the first month of fieldwork. No changes were made to the methods used based on this initial phase of data collection and the data collected were included with the rest of the data from the study. One thing that became apparent during this initial phase was that women felt somewhat sensitive about the questions on the anxiety and depression scale (described in detail below) because of stigma around mental health problems. This led me to be more careful in discussing mental health issues, particularly depression (attitudes toward which are discussed in Chapter Five) during the fieldwork. Specifically, I began to separately introduce the anxiety and depression section of the questionnaire with a short explanation, which helped to avoid the questions taking women by surprise. The explanation also made it clear that I was asking these questions of all participants (because I thought that some women in the study might be depressed or anxious) so that women did not think I had singled them out for the mental health-related questions. The addition of this explanation did not seem to affect the actual responses by the participants but did seem to make them feel more comfortable.

### ***Questionnaire-based Interviews***

The questionnaire-based interview was semi-structured and included four parts: a section on socio-demographics and health, a section about menopause, a section including an anxiety and depression questionnaire, and a section including an acculturation scale (see Appendices One, Two, Three, and Four).

The socio-demographic section included questions about marital status, parity, subjective social status, educational attainment, employment history, and date of birth. Previous research has demonstrated that some members of this population may not know their exact dates of birth (Bowler 1993), so several methods were used to attempt to determine year of birth for participants unsure of their date of birth (described below in the section Methods for collecting and using dates and ages).

The community version of the MacArthur Scale of Subjective Social Status (Adler et al. 2007) was used to assess social status in the community. Participants were shown a printed picture of a ladder and asked the following question:

Think of this ladder as representing where people stand in their communities. People define community in different ways, please define it in whatever way is most meaningful to you. At the top of the ladder are the people who have the highest standing in their community. At the bottom are the people who have the lowest standing in their community. Where would you place yourself on this ladder? Please place a large “X” on the rung where you think you stand at this time in your life, relative to other people in the community.

The ladder status variable used in the present study is thus a subjective measure of social status relative to others in the participant’s own community. This means it is not necessarily a reflection of the same characteristics as would be reflected in an objective social status measure, particularly one that did not ask people to represent their status within the community of which they felt they were a part. Previous research has suggested that subjective social status measures can be thought of as composite measures of socioeconomic status which include factors such as education, occupation, and income (Singh-Manoux et al. 2003; Webster and Driskell 1978; Segal et al. 1970), which participants may weight differently in making their assessment of themselves. Singh-Manoux and colleagues (2003) concluded that subjective social status represents an ‘average’ of standard measures of socioeconomic status including an assessment of both current and future prospects, suggesting that it is a better measure of social status than any single objective indicator (Manuck et al. 2010).

Use of such subjective measures has recently been found to be important in health research. Subjective social status measures have been found to predict obesity (Goodman et al. 2003), health status (Singh-Manoux et al. 2005), and change in health status over time (Singh-Manoux et al. 2005) better than objective social status measures, and to predict presence of metabolic syndrome independent of objective social status measures, age, sex, and race



(Manuck et al. 2010), though there have been some exceptions (MacLeod et al. 2005). Subjective social status measures have been found to predict cortisol level independently of a range of objective social status measures (Adler et al. 2000; Wright and Steptoe 2005) and a number of other covariates (Wright and Steptoe 2005). This indicates that subjective social status may influence health outcomes through neuroendocrine pathways. Wright and Steptoe (2005) suggest that subjective social status may be particularly useful in older adults because it can provide an aggregate estimate of lifetime social experience that is more difficult to achieve via objective measures of social status. While there is a possibility that the validity of such subjective measures may be influenced by negative affect on the part of respondents, research has suggested that negative affect is associated with *both* subjective and objective social status measures (Operario et al. 2000). In addition, some studies have found that associations between subjective status and health status remain significant after adjustment for negative affect (Adler and Stewart 2007) and the association between subjective status and health outcomes in the aforementioned longitudinal study suggests that negative affect does not fully explain what the subjective status measures are capturing.

The ladder question used in the present study to measure subjective social status, using as it did a drawing of a ladder, proved particularly useful since many study participants were illiterate. This particular measure is less frequently used than some other subjective status measures, most of which do not include an idea of community. Since ideas of respect and reputation in the community have been found to be very important among Pakistanis (as mentioned in Chapter Two), the idea of community seemed important to represent within the subjective measure. During the interviews, participants frequently explained their choice of ladder rung as they marked it and I noted what they said. These responses were very useful because they gave me information about what women thought was important in determining their social status. Most frequently discussed were the behaviour and achievements of themselves and their family members, usually their husbands and their children. This included their levels of education, their jobs (including how well any businesses owned were doing) and their financial stability. Several women mentioned the marriages of their children (whether they had arranged these marriages yet, whether their children had been forced to get married or had married well and voluntarily) as an important part of their status. Some talked about how far they had come up the ladder since arriving in the UK because some felt that they had been at the bottom when they first arrived. The community element was also very strong. It seemed that most women felt that being known by, and socialising with, many

people in the community was required for being high on the ladder and that being unhappy or stressed meant they were low on the ladder (largely because this affected their social lives, as discussed in Chapter Five).

This range of considerations supports the conclusions above that subjective social status measures are composed of a broad range of considerations about social status. Furthermore, the fact that women included in their explanations of their own perceived social status more than just their own personal level of success in different arenas is useful to know since objective social status measures are usually more individual. More individualising measures of status may not be ideal where women's status (in the sense of prestige and material comfort) is not only based on their own achievement (or lack thereof) but from the achievements of their family members in the eyes of the people who they feel are their community.

The health history section included questions about self-reported current health status, body size in childhood and adolescence, current physical activity, tobacco use, hysterectomy, hormone replacement therapy (HRT) and contraceptive use, diagnosed chronic conditions such as diabetes, and use of mammography and cervical smear test services. Though, ideally, prospective measures of childhood growth would be used, these are not available and accuracy of recalled body size in childhood and adolescence have been shown to be reasonably good in middle age (Casey et al. 1991; Must et al. 2002). Recalled menarcheal age in mid-life has been shown to be accurate in most cases to within one year in various populations (Casey et al. 1991; Must et al. 2002; Cooper et al. 2006), however, the use of menarcheal age as an ordinal variable (early, average, late - based on the sample mean) has been shown to increase validity where there may be recall errors (Cooper et al. 2006) and thus has been used in this study.

In the menopause section of the questionnaire participants were asked to report any changes they had personally experienced (positive or negative) which they associated with menopause and to rate them on a five point scale in terms of their severity (for negative symptoms) or in terms of the degree to which it was a change from premenopausal life experience (for positive or neutral symptoms). Participants were each shown an image of five glasses of water of descending fullness to assist with the use of the five point scale of severity/degree of change (Appendix Four). I (or an interpreter) also read aloud a list of 34 symptoms and asked the participant whether she associated each symptom with menopause. The symptom

list was a version of the Everyday Complaints list (Kaufert and Syrotiuk 1981) (which includes an additional four symptoms added by Dennerstein et al. 2000, see Chapter Five for a full discussion of the symptom list). This list was used to see whether women would agree with the distinction between menopausal symptoms and everyday complaints (unrelated to menopause) inherent in the list, particularly since, of the 18 everyday complaints, eight are either included on or are very similar to items from at least one of the other standard symptom checklists<sup>10</sup>, ostensibly as possible ‘true’ symptoms of menopause. To this list one additional symptom was added, memory loss, which has been reported to be a symptom of menopause experienced by Pakistani women (Wasti et al. 1993) and attributed to menopause by British Pakistani women (Gupta, Sturdee, and Hunter 2006). It has also been explored in other studies (Devi et al. 2005).

The menopause section also included questions about the date of last menstrual period, menstrual history, and whether menstrual periods had been occurring monthly for those who had experienced a menstrual period in the last 12 months. Recalled ages at menopause for women who are several years post-menopausal may be inaccurate (den Tonkelaar 1997). However, as a way of increasing validity, women were asked questions about their last menstrual period in relation to events in the past several years (in a way similar to the event history calendar since one point of reference was September 11, 2001 but including some more personal points of reference such as the births of grandchildren). This may have increased validity.

The Pakistan Anxiety and Depression Scale (PADS) (Appendix Three) was used to assess psychosocial stress. The PADS is a validated instrument which incorporates culturally specific ways of expressing distress (e.g. feeling like one has committed a serious sin, feeling lazy, and feeling like one is being punished for something) (Mumford et al. 2005). It includes two sections, one which scores depression and another which scores anxiety.

In the section pertaining to acculturation, women were questioned about a number of aspects of their lives which may have been influenced by acculturation using the Suinn-Lew Asian self-identity acculturation scale (Suinn, Ahuna, and Khoo 1992) (see Appendix Two). This validated index includes questions about connections with the Indian subcontinent, media preferences, language use, education, food choices, as well as self-identification.

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<sup>10</sup> These eight ‘everyday complaints’ are backaches, upset stomach, aches or stiff joints, swelling of body parts, difficulty concentrating, urine control problems, bladder infection problems, skin irritation [crawling or dryness].

### Methods for collecting and using dates and ages

Since British Pakistanis often do not know their exact dates of birth (Bowler 1993) and it is generally difficult to recall precise dates for events like final menstrual period (particularly since this is only recognizable 12 months later), many women approached and interviewed were not able to give exact dates or ages in response to questions from the questionnaire. Several methods were used (both in data collection and analysis) to help increase validity and reduce the amount of missing data. These are described here briefly and expanded upon in the forthcoming sections.

In order to try to establish a year of birth for women who did not know their year of birth or to check whether a year of birth given was likely to be correct, two sets of questions were asked. First, a Pakistan-specific event history calendar (developed for this study) was used (Appendix One). Participants were asked questions about whether they were born before or after events in Pakistani history, whether they remembered those events if they had been born, and, if so, how old they estimate that they were at the time (sometimes in relation to the current ages of their grandchildren). Second, women were asked if they knew their age at the birth of their first child (since some women had known their ages when younger – especially around the time of marriage - but had lost track since) and were then asked for the child's current age. If a woman gave answers that indicated the suspected or reported year of birth could not be correct and a more credible year of birth could not be established, the woman's age was treated as missing data.

For women who were postmenopausal (see section entitled Menopausal Status under the heading Variables Created for a description of how this was established), age at natural menopause was determined either based on a reported age in years or calculated based on the calendar year (and month, where reported) in which the last menstrual period is reported to have occurred and the available information about date/year of birth. To check on the validity of the reported timing of the last menstrual period, women were asked questions about their last menstrual period in relation to events in the past several years (in a way similar to the event history calendar since one point of reference was September 11, 2001 but including some more personal points of reference such as the births of grandchildren).

In order to increase the amount of data that was usable for analyses and to avoid giving a false sense of precision about age-related data, several variables relating to reported age were grouped into ordinal categories and used as ordinal variables (described in detail below in the

section entitled Variables Created). These include Age at Menarche, Age at Menopause, and Mother's Age at Participant's Birth.

### ***Anthropometry***

Measurements of height, weight, waist circumference, sitting height, and body fat (measured with BodyStat 1500 handheld body composition monitoring unit) were taken from each participant who was interviewed in the questionnaire-based interview. Derived measurements include Body Mass Index (BMI), body fat percentage (directly taken from Body Stat 1500), and Fat-Free Mass (FFM) (also directly taken from Body Stat 1500). Height was measured using a portable Leicester height measure, weight was measured using a Seca digital bathroom scale, and waist circumference using a non-stretchable Seca circumference measuring tape.

### **Qualitative Data Collection**

#### ***Participant Observation***

Participant observation is a research method of great importance to anthropology (Bernard 2002). It allows the researcher to develop an intuitive and contextualised understanding of the behaviour of members of a group and to reduce the extent to which that behaviour is influenced by the fact that the group is under study (Bryman 2004; Bernard 2002). It is generally considered to be a necessary part of ethnographic fieldwork (Bryman 2004). Ongoing data collection during the whole of the fieldwork period for the current study was achieved via participant observation. As a participant observer, I established residence in Bradford, made friends and acquaintances in the Pakistani community, obtained further Urdu and Punjabi language practice, took part in community and family activities with British Pakistanis (such as cooking and attending exercise classes and holiday celebrations), worked to establish rapport, and attempted to understand how the issues related to the research questions played into everyday life. This method also helped me to gain trust and access to women eligible for interview. I made a systematic record of day-to-day interactions, observations, and informal conversations by recording field notes on a daily basis throughout

most of the fieldwork period (Bryman 2004; Bernard 2002). As part of an iterative process, field notes helped me to identify and manage sensitive and otherwise important issues related to the research questions (e.g. contraceptive use, *biradari* [discussed in depth in Chapter Two], consanguinity) and domains of life that needed to be examined in greater detail. Long-term participant observation also provided opportunities for me to speak with a few Pakistani men of different ages without behaving inappropriately by Pakistani standards. By becoming very close with several British Pakistani families, it was possible to speak with some male family members about a range of topics including the research, because I was treated more as a family member than a guest and it is considered acceptable for men to speak with female kin.

A significant portion of participant observation was carried out while spending time with and getting to know the interpreters and community development workers. These were all women of South Asian origin, mostly Pakistani, who helped to recruit and interview participants. The interpreters who worked with me were important informants for the project. They often helped me to understand norms both through their explanations as well as the things they struggled to explain. I volunteered and worked alongside community development workers in two women-only community centres which served mostly Pakistanis, sometimes running sessions about menopause and health (as mentioned above). I also attended and helped out at other events which community development workers organized, where they introduced me to both colleagues and potential participants.

### ***Qualitative Data from Questionnaire-Based Interviews***

During these interviews, notes were taken about comments or explanations which the participant added to her answers, conversations (between the participant and me) and stories told relating to the questions on the questionnaire, and any issues regarding how the participant or interpreter understood the questions. Some women opened up a great deal during the questionnaire-based interviews and began telling many stories from their lives, making it rich in depth and similar to a life history interview. These notes constitute qualitative data from the questionnaire-based interviews.

### ***Life History Interviews***

The life history interview is a method used to examine events and experiences in an individual's life, and the feelings or emotions associated with these events, usually following a chronological pattern (Bryman 2004). These narratives are constructed for consumption by the researcher (me) and are influenced by the participant's perception of and relationship with the researcher (and, where present, the interpreter), but their telling is also a process by which the participant's identity is shaped. The way that events are represented, or the fact that some events are not represented, is influenced by local norms and values. The interview thus reveals something about these norms and values as well as the participant's perception of me.

I carried out 19 full life history interviews; some others were started but cut short and never finished either by the choice of the participant or because of other circumstances (n=3). Data from the partial life history interviews have been used along with those from the complete life histories. Participants were encouraged to express themselves in their own terms and to determine the pace of the interview. Some women required little prompting to tell their stories while others seemed to prefer to be asked questions to prompt them to talk about different times in their lives. At times when I needed to come up with questions to drive the interviews along I used a printed list of topics I hoped to cover in the interviews to help me to ask about topics of interest. The list is included below in Box 3.1. The length of the interviews ranged from 22 minutes to 2 hours and 4 minutes. Some of these interviews were carried out over more than one session to avoid taking up too much of the participant's time in one sitting. Audio-recordings of the interviews were made with the consent of both the interviewee and, where present, the interpreter.

#### **Box 3.1 In Depth Interview Prompts**

Tell me about where and when you were born...

Tell me about growing up in \_\_\_\_\_...  
(menarche, body size in relation to peers, education)

Tell me about how you got married...  
(how old was she, where did he come from, consanguinity, her *biradari* and his)

What did you expect before you came to Britain...

What was your experience of coming to Britain...

(when, where arrived/lived, was it what you expected, was it better or worse)

Tell me about having your children....

(breastfeeding, how many children, how old was she then)

Tell me about what it has been like getting older

(children growing up, ageing, health problems, menopause, symptoms of menopause)

In the current study, life history interviews facilitated an understanding of the lived experience of menopause, and the meanings attached to this process of reproductive ageing. They also helped to elucidate the relationships between various socio-cultural and/or socio-demographic factors, e.g. acculturation and timing of migration, consanguineous marriage and parity. Since the aim of these interviews was not to focus on just the current experience of menopause, the age range was wider than the questionnaire-based interview; the youngest woman interviewed was 38 years and the oldest was 74. Most of the life history interview participants (16 out of 19) had been born in Pakistan but a significant number of interviews were conducted exclusively in English (n=10), the rest being done in Punjabi or Urdu or a mixture of one of these and English. The women who took part in the life history interviews had a wide range of education levels, from some with postgraduate degrees to some who had no formal education at all.

These interviews were carried out later in the research project. The aim was to interview women whom I came to know well through fieldwork, since they would be most likely to trust me and be open. However, several life history interviews were with women whom I had not known previously but who knew the interpreter very well (she vouched for the fact that I was trustworthy). The fact that several of the women who participated in life history interviews did not participate in the questionnaire-based interview seemed to be something of an advantage in getting women to speak freely for longer periods of time because they were not given to think about the study as something more 'medical', an impression which could be created by questionnaire-based interviews and anthropometry.

### **Data Analyses**



## Quantitative Data Analysis

This section will describe both the statistical procedures used and the manner in which the variables used in the analyses were created. Descriptive statistics were calculated for all variables as appropriate. All continuous variables were inspected for statistical normality. Several variables were not normally distributed and non-parametric tests were used with these variables where appropriate. Basic characteristics of the overall sample are given in Table 3.1.

**Table 3.1: Selected characteristics of the overall sample**

Age at interview (years) (n=253)	Mean ± SD	Range
-	49.53 ± 5.49	39.33-61.17
Country of birth (n=257)	N (%)	
Pakistan	246 (95.7)	
United Kingdom	4 (1.6)	
Other	7 (2.7)	
Place of residence (n=257)		
Leeds	42 (16.3)	
New Pudsey	1 (0.4)	
Bradford District	212 (82.5)	
<i>Bradford (city)</i>	73 (28.4)	
<i>Shipley</i>	1 (0.4)	
<i>Keighley</i>	138 (53.7)	
Other area of W. Yorkshire	2 (0.8)	
Marital Status (n=257)		
Never married	2 (0.8)	
Married	213 (82.9)	
Divorced or Separated	18 (7.0)	
Widowed	24 (9.3)	
Menopausal status* (n=257)		
Premenopausal	102 (39.7)	
Perimenopausal	47 (18.3)	

Naturally Postmenopausal	84 (32.7)
Surgically Postmenopausal	18 (7.0)
Menopausal status unclear	6 (2.3)

\* using criteria described on p69-70 in this chapter

Two of the statistical tests used, ordinal logistic regression and multinomial logistic regression, are sensitive to the number of cells in the chi-squared contingency table (illustrated in Table 3.2) with a frequency of zero (called ‘zero cells’) and results become less reliable with very high standard errors if the number of zero cells is large. Therefore, many continuous variables were converted to ordinals (with a small number of groups) which reduces the number of zero cells. Similarly, some variables could not be used as independents in multinomial logistic regression because they could not be grouped into few enough categories to avoid too many zero cells while still being meaningful for analyses. These include social class, husband’s social class, waist circumference, tobacco use, and body fat percentage. This arises partly due to the relatively small sample size and partly as a result of certain trends within the British Pakistani population, such as a tendency toward very high waist circumference or historical tendencies to take up certain kinds of employment in the UK.

**Table 3.2: A simplified illustration of the type of contingency table used within various logistic regression models**

	Outcome Variable Level 1 (e.g. death)	Outcome Variable Level 2 (e.g. survival)
Predictor Variable Level 1 (e.g. female)	Cell containing the number of females who died	Cell containing the number of females who survived
Predictor Variable Level 2 (e.g. male)	Cell containing the number of males who died	Cell containing the number of males who survived

### *Statistical procedures*

The statistical software package SPSS, version 15, was used for all statistical analyses.

#### Predictors of the Timing of Menopause (Chapter Four)

Ordinal logistic regression was used to test models predicting the timing of menopause because it can fit models with a dependent variable with polychotomous ordered categories (such as an outcome variable which is measured on a Likert scale). As higher categories of the ordinal dependent variable (timing of menopause) were more likely (that is, more women were in the 51+ menopausal age category), the complementary log-log link function was used as recommended (Garson 2009b; SPSS 2002; Chan 2005). The first models tested were univariable ordinal logistic regression models of all hypothesized predictors and, as a second stage, multivariable ordinal logistic regression models were used to test predictive models including several independents.

The analyses of the predictors of timing of menopause were first intended to be carried out using survival analysis models, in particular Cox Regression, and both recruitment strategy and sample size were calculated based on this plan. In particular, recruitment of women who were not postmenopausal was undertaken because survival models can handle cases in which the event (in this case last menstrual period) has not yet occurred. However, it was ultimately not possible to use survival analysis because of the lack of precision of the information about last menstrual period. Survival models cannot handle data in which there are a significant number of ties in the time to the event (in this case the time from birth to menopause, or age at last menstrual period). Since many women have their last menstrual period in their 49th, 50th, or 51st year of life, a valid year and month would be required to have a chance of making a Cox or other survival models produce a valid result. Initial attempts to plot a Kaplan-Meier curve showed how problematic the ties were in this sample. A prospective study design including frequent follow-up data collection would have made it possible to use Cox regression with timing of menopause but it would also have been necessary to have a population in which one can be sure of exact ages/dates of birth since both precise date of last menstrual period and a precise age would be required. It was not clear from the outset of the study how precise recall of last menstrual period would be or the number of women in this age group who might not be able to provide a credible date of birth. As detailed above, ordinal logistic regression was an appropriate alternative method of analysis given the constraints of the sample.

### *Sample size calculations*

The sample size for all quantitative analyses in the present study were based on the sample size calculations for the timing of menopause analyses and, for reasons explained above, these were based on the intention to perform Cox Proportional Hazards regression. The methods for determining minimum sample size for Cox Proportional Hazards regression vary and are not agreed upon among statisticians. However, a recent publication indicates that for a one-tailed test at the 0.05 significance level with 80% power where the survival rate is 50% (50% of sample are likely to achieve menopause) with an effect size of 0.35 (moderate) with a non-binary covariate, the sample size should be at least 102 (Hsieh and Lavori 2000). As a two tailed test is most appropriate, since, though the hypotheses are directional, I am interested in exploring associations in both directions, the sample size must be above 102. More specific sample size calculations for the present study would have required estimates of the variance of variables to be collected. As this was a previously unstudied population for nearly all of the quantitative variables, this information was not available. However, the backup plan for analysis of timing of menopause prior to data collection, multiple regression, suggested a different minimum sample size. Based on calculations made using G\*Power, the minimum calculated sample size for multiple regression with 12 covariates (a large model) in a two tailed test at the 0.05 significance level with an effect size of 0.15 (moderate) at 80% power is 127 (Faul et al. 2007). In order to use multiple regression, a sufficient number of women must have achieved menopause to adequately power the analyses (that is, censored cases can not be included), it was estimated that about 50% of the women in the age group 40–60 would have achieved menopause, thus, the minimum sample size calculated prior to data collection was 254 women.

### *Statistical assumptions testing*

For all ordinal logistic regression models, the assumption of proportional odds was tested. The assumption was violated for one of the independent variables tested (Ladder Status, described below in the section Variables Created). This independent variable was put into a separate multinomial logistic regression model with ordinal timing of menopause as the dependent variable to see whether any of these had a relationship with the timing of menopause that differed in slope across the categories of timing of menopause. Since ladder status was found to be a significant predictor of timing of menopause, it was included in a multivariable multinomial logistic regression model with other predictor variables in order to

assess all significant predictors in a single model. As odds ratios for the final multinomial logistic regression model were extreme values and data were somewhat sparse, the model was assessed in binomial logistic regression to create a more valid set of odds ratios.

For all multinomial and binomial logistic regression models which included continuous or ordinal independent variables, the assumption of linearity in the logits was tested. For those with continuous variables, the Box Tidwell transformation test was used to test this assumption. Each continuous independent variable was multiplied by its natural logarithm  $[(X) \cdot \ln(X)]$  and the resulting term was entered into the model along with the independent variable being assessed for violation of the assumption, significance of the new term was an indication of non-linearity in the logit. In each case where a continuous independent violated the assumption of linearity in the logit, a categorical version of the variable was created and entered into the logistic regression model to produce separate parameter estimates for different levels of the variable. For ordinal independent variables, the assumption of linearity in the logit was tested by carrying out logit step tests by running logistic regression tests on variables transformed into categorical variables by SPSS's Visual Bander function and checking for linear step increases or decreases in the b coefficient of the new variable.

#### Factor Analysis of Symptom Attribution to Menopause (Chapter Five)

In order to investigate underlying higher-order abstractions in the understanding of menopause symptomatology, responses from the symptom checklist were used in factor analysis, where 'no' and 'I don't know' answers were grouped together and nine 'maybe' answers were excluded (this option was not listed but some participants would only give this response). In exploratory factor analysis, the number of factors was determined by examining the factors extracted through principal components analysis with eigenvalues greater than one and scree plots to identify the point at which eigenvalues began to level off. On this basis, it was decided that five was the most informative number of factors. Five factors were then extracted using the method of unweighted least squares with varimax rotation. Factor scores were calculated by regression, saved and analyzed for their relationships to age, menopause status, and generation. As factor scores were not normally distributed their relationship to age, menopause status and migration status were explored using Spearman correlation, Mann-Whitney U tests, and Kruskal-Wallis tests. Surgical and

naturally menopausal women were put into one category for Kruskal-Wallis tests, and women whose menopausal status was indeterminable (n=6) were excluded from analyses involving menopause status.

### Predictors of Hot Flush Experience and Severity (Chapter Six)

Binomial logistic regression was used to test models predicting whether or not participants would report having experienced hot flushes. Multinomial logistic regression was used to test predictors of the self-reported severity of hot flushes in those who had reported them.

Hot flush severity analyses were performed on data from a subsample of participants (103 out of the total sample of 257) since severity of hot flushes could only be collected from the women who had experienced hot flushes. This reduction in numbers, along with the zero cells problem which arises from small samples in multinomial logistic regression, meant that several variables had to be either modified or excluded from the hot flush severity analyses.

The variables excluded were weight, waist circumference, (participant's) own social class, husband's social class, tobacco use, and *biradari*. *Biradari* and tobacco use were excluded because one category in each of these dichotomous variables became too small to allow inclusion of the variable in a model. The social class variables were excluded because group sizes became very small and collapsing categories together would not have produced meaningful results (i.e. social classes I, II, IIIN, and IIIM would have been grouped together). Weight and waist circumference were excluded because they were not convertible into meaningful categorical variables. Waist circumference in particular was not amenable to conversion into a categorical variable since nearly every participant had a waist circumference over the established healthy cut-off in this population.

The variables modified for inclusion in hot flush severity analyses were body mass index, body fat percentage, age at menopause, menopausal status, self reported health, vigorous physical activity, and ladder status. Each of these was converted into a categorical variable with a small number of categories or the number of categories was reduced to create more stable logistic regression models. Body fat percentage was replaced with a body fat mass and a categorical version of the z-score of body fat mass was used since body fat percentages across the sample were very high and a clear cut-off could not be established.

Several variables which have been tested for a relationship with hot flush experience or hot flush severity were measured at the time of interview rather than specifically at the time of the hot flushes (for those who had experienced hot flushes but were not still experiencing them at the time of interview), creating something of a temporal problem for some cases. Since women were not asked whether they were still experiencing hot flushes, it is not clear how many women reporting the experience of hot flushes were reporting experiences far in the past. This introduces some error into the analyses but since these characteristics at the time of interview (physical activity, body composition, self-reported health, anxiety score, depression score) are likely to be stable over the period of time from experience of hot flushes to the time of interview, the results should still provide some indication of relationships. Ideally, only current experience of hot flushes would have been tested for relationships to aspects of current body composition, anxiety, depression, etc.

#### *Statistical assumptions testing*

For each logistic regression model (either binomial or multinomial) which included continuous or ordinal independent variables the assumption of linearity in the logits was tested. For those models with continuous independent variables, the Box Tidwell transformation test was used. Each continuous independent variable was multiplied by its natural logarithm  $[(X)*\ln(X)]$  and the resulting term was entered into the model along with the independent variable being assessed for violation of the assumption. Statistical significance of the new term  $[(X)*\ln(X)]$  was an indication of non-linearity in the logit. In each case where a continuous independent variable violated the assumption of linearity in the logit, a categorical version of the variable was created and entered into the logistic regression model to produce separate parameter estimates for different levels of the variable. For ordinal independent variables, this assumption was tested by carrying out logit step tests by running logistic regression tests on variables transformed into categorical variables by SPSS's Visual Bander function and checking for linear step increases or decreases in the b coefficient of the new variable.

#### *Variables Created*

The manner in which variables used in the quantitative analyses were created from the data collected is outlined below.

### Age

Age was calculated for most participants (n=197) as a decimal figure rounded to the nearest month (so that 45 years and 6 months was rendered as 45.5 years) based on date of interview and date of birth. Year of birth plus six months was used along with date of interview to determine approximate age for 56 participants. For four participants, no single year of birth could be determined though a likely age range was determinable during the interview and these ages were all within the study age range. These women's ages were treated as missing data, and they were excluded from models in which age (or another variable based on age such as age at menopause) was a variable in the model.

### Migration Status

Migration status was determined based on answers to questions about place of birth and timing of migration. For those women not born in the UK, year of migration and age at menarche were used to determine whether migration occurred either post-puberty or at/before puberty. Other studies have used the relationship between the timing of menarche and the timing of migration as a way of separating migrants who were mostly raised in the country of residence versus migrants who were mostly raised in the country of origin and found biological differences between the two groups (Núñez-de la Mora et al. 2007, 2008).

### Menopausal Status

Women were assigned to the menopausal status categories listed in Table 3.1 based on their responses to questions from the questionnaire. Women were categorized as premenopausal if they had 12 menstrual periods in the previous 12 months or if the missed menstrual periods were due to pregnancy or lactation in the past 12 months. Women were categorized as perimenopausal if they had experienced irregular menstrual periods in the past 12 months (for women whose periods would be expected to be regular based on personal history and a



absence of pregnancy or lactation). Women were categorized as naturally postmenopausal if they had experienced no menstrual periods in the past 12 months and this was not due to a surgical procedure such as hysterectomy. Women were categorized as surgically postmenopausal if they had experienced no menstrual periods in the past 12 months due to hysterectomy or other surgical procedure. This way of categorizing women is based on a standard definition of menopausal status (Brambilla, McKinlay, and Johannes 1994). In some cases, women were coded as surgically post-menopausal because their periods had stopped following an unknown procedure, that is, some women were uncertain about the nature of the surgical operation which had been performed on them and could not identify it by name. For some women, menopausal status could not be determined because of difficulty in recalling the timing or cause of the end of menstruation (surgical, chemical, or natural) or because of other reproductive problems.

#### Age at Menopause

Age at natural menopause was either reported in years or calculated from the calendar year reported along with year of birth. Few postmenopausal women were able to give the exact month of their last menstrual period, and many did not know their birth date. Such problems made it impossible to use a more exact estimate of date of last menstrual period (and thus use of a continuous variable representing age at menopause). Participants who reported that their periods had stopped as a result of a surgical procedure (oophorectomy, hysterectomy, or other unknown procedure) were excluded from this variable (n=18), as were those who did not know when their last menstrual period occurred (n=4). Three participants who reported a very early menopause (which may represent premature ovarian failure) – one at 20 years, one at 30 years, and one at 32 years – were also excluded. The commonly used epidemiological cut-off of  $\leq 40$  years for premature ovarian failure was not used because previous studies of Pakistani women have reported an average age at menopause several years younger than the mean for western countries in which this cut off is generally applied (Wasti et al. 1993; Yahya and Rehan 2002; Khanum, Asif, and Tajammul 2001). Instead a cut off of  $< 36$  years was used.

#### Ordinal Age at Menopause

Age at natural menopause was roughly normally distributed with a mean of 49 years (or 48.7 before consideration of significant figures) and a median of 49.5 years. This variable also exhibited near bi-modality as the two most common ages at menopause were 49 (n=10) and 50 (n=11) years together representing 27.7% of the sample for whom age at menopause is known. These were put into one ordinal category representing the women whose age at menopause was average for the sample. Those with menopausal ages lower than 49 years were put into a category together (representing relatively early menopause) and those with a menopausal age higher than 50 years were put into a category together (representing relatively late menopause). Those participants who were 51 or older but who were not postmenopausal at the time of interview were included in the variable in the higher menopausal age category in order to increase the 'n' of the variable (from n=76 to n=95). Women under 51 who were not postmenopausal had to be excluded from this variable since it was not possible to determine when they would reach menopause. The use of age at menopause as an ordinal variable has allowed for the inclusion of a greater number of women in the analysis of predictors of timing of menopause and has avoided a false sense of precision about age at menopause in a sample in which 60 women were unable to give a date of birth and even postmenopausal women who did know their date of birth were generally unable to report the month in which they had experienced their last menstrual period.

#### Ordinal Mother's Age at Participant's Birth

Mother's age at the birth of the participant was reported either in whole years, as an age range (e.g. 14-16 years), or had to be calculated based on mother and daughters' current ages or mother's age at some other date. Ordinal divisions were made based on those used in Smits et al. (1999) and Volarcik et al. (1998) who made ordinal divisions based on the period of the reproductive lifespan (e.g. early reproductive life, middle reproductive years, late reproductive period, etc.). This also allowed the inclusion of many of the age range responses to be included since they fit within the final 5 age categories (13-20 yrs, 21-23 yrs, 24-30 yrs, 31-34 yrs, 35-48 yrs).

#### Ordinal Time to First Birth from Marriage

The length of time from marriage to first birth in years was calculated based on subtracting calculated or reported age at first birth from calculated or reported age at marriage. Excluded from this variable were eight participants whose time to first birth had a less than zero value. It is not clear whether this is due to errors in reporting or childbirth before the age at marriage reported (possibly out of wedlock or from a previous unreported marriage). Ordinal divisions were made in the values creating three groups ( $<2$  years [representing no significant delay], 2-3 years [representing a short delay in local terms], and  $\geq 4$  years [representing an extended delay in local terms]).

A second version of this variable was created to include only those women who reported never having used using any form of contraception but this variable had a much lower  $n$  (in the subsample for whom menopausal age category could be determined,  $n=43$  [compared with  $n=229$  for the full variable]). Its usefulness was also somewhat reduced by the observed high degree of social pressure to produce a first child early in the marriage as well as the explanations of women interviewed that the use of contraception was typically a method of spacing children after the first child.

#### Ordinal Age at Menarche

As mentioned above, an ordinal version of this variable was created to increase validity following the method used in Cooper and colleagues' (2006) paper which showed that use of ordinal categories of recalled age at menarche increased validity. The divisions were made with respect to difference from the sample mean ( $\mu = 14.35$  years). The age at menarche variable was normally distributed. Those whose reported age at menarche was more than one standard deviation ( $SD = 1.69$ ) less than the mean age at menarche were placed in the early menarche ( $<12.65$  years). Those whose reported age at menarche was more than one standard deviation greater than the mean age at menarche were placed in the late menarche group ( $>16.05$  years). Those whose reported age at menarche was less than one standard deviation greater or less than the mean age at menarche were placed in the average menarche group (12.66-16.04 yrs).

#### Educational Attainment

Each participant was asked whether she had any formal education; those who had some formal education were asked to give their highest educational achievement as well as the country in which they were educated. Women responded either by giving the name of the highest qualification attempted or achieved (e.g. GCSE, Matriculation [a Pakistani education level]), by giving the age at which they left education, or by giving the number of years of education received. This information was used to calculate a number of years of education based on the system of the country in which the person was educated. This was then listed into larger ordinal groups.

### Social Class

Two social class variables were created; the first was created on the basis of responses to questions about ever having worked and jobs ever held, the second was created on the basis of responses to questions about husband's current employment status and current job. Participants were first categorised based on the National Statistics Socio-economic Classification (NS-SEC) Operational Categories (Rose, Pevalin, and O'Reilly 2005) for the participant's highest level job ever worked and husband's current job. Social class was then derived from the conversion list for NS-SEC codes to Social Class in 6 categories: I (Professional occupations), II (Managerial and Technical occupations), IIIN (Skilled occupations-non-manual), IIIM (Skilled occupations-manual), IV (Partly-skilled occupations), and V (Unskilled occupations) (Rose, Pevalin, and O'Reilly 2005). As there were fewer participants in the most and least advantaged social classes, social class was regrouped (I with II, IIIN with IIIM, IV with V) to create categories of more comparable size. Participants who had never worked outside of their home were put into a separate category together in the Own Social Class variable (named so as to distinguish it from husband's social class). Women whose husbands were currently out of work were also put into a separate category together for the Husband Social Class variable. Social class was preferred to the NS-SEC 3, 6, 8, or 9 category system for these analyses since the distinctions that the NS-SEC seeks to make between large employers, small employers, technical managers, and agricultural labour, while useful in nationwide official surveys, are not useful for this population most of whom have only ever been involved in factory work

### Biradari

In the total sample 49 different *biradaris* were reported, most of which had a frequency of 1. The largest single group by far was *Choudhary Jatt* with 28% of the total sample (n=73). Since it was a group large enough to be used as a category even in analyses of a sub-sample of women in the study (such as is used in Chapter Four) and since, based on the ethnographic fieldwork, it was the *biradari* which people most often referred to as a group distinct from all others locally, a variable was created indicating membership in the *Choudhary Jatt biradari* vs. all other *biradaris*.

### Ladder Status

Each participants' choice of rung on the ladder picture was turned into a numeric response by numbering the rungs 1-10 (highest to lowest) with the space between rungs represented as the number of the rung above plus 0.5. In order to avoid problems in analyses due to small group sizes, ladder status was converted into two ordinal variables, one with four categories (High [ $<2.5$ ], Moderately High [2.5-4.5], Moderately Low [5.0-7.0], Low [7.5-10.5]) and one with 2 categories for multinomial logistic regression (fifth rung or higher, lower than fifth rung).

### Suinn Lew-Asian Self Identity Acculturation (SL-ASIA) Scale Variables

All variables created based on the SL-ASIA questionnaire responses were created in the manner described by its authors (Suinn, Ahuna, & Khoo, 1992). The SL-ASIA score variable was created based on the responses to questions 1-21 on the questionnaire. Each response had a value from 1 to 5 and these values were summed and divided by 21 to create a score from 1.00 (Asian identified) to 5.00 (Western identified) for each participant. The SL-ASIA Behavioural Competency variable was created based on responses to questions 24 and 25 on the SL-ASIA questionnaire (with the assumption that "fitting" reflects the presence of behaviours that enable such a fit):

24. Rate yourself on how well you fit when with other Asians of the same ethnicity:

1	2	3	4	5
(do not fit)				(fit very well)

25. Rate yourself on how well you fit when with other British people who are non-Asian (Westerners):

1	2	3	4	5
(do not fit)				(fit very well)

Those participants who answered 24 with '4' or '5' (high Asian fit) and 25 as either '1', '2', or '3', (low Western fit) were classified as Asian-identified; those who answered 25 with '4' or '5' (high Western fit) and 24 with either '1', '2', or '3' (low Asian fit), were classified as Western-identified; and those who answered 24 with '4' or '5' (high Asian fit) and 25 with '4' or '5' (high Western fit), were classified as 'bicultural'. Those who answered '1', or '2' for both 24 and 25 (low Asian and low Western fit) were considered to be denying any identification and possibly alienated from both cultures (few women fell into this category, n=5).

The SL-ASIA Values variable was created based on responses to questions 22 and 23 on the SL-ASIA questionnaire:

22. Rate yourself on how much you believe in Asian values (e.g., about marriage, families, education, work):

1	2	3	4	5
(do not believe)				(strongly believe)

23. Rate your self on how much you believe in British (Western) values:

1	2	3	4	5
(do not believe)				(strongly believe)

Those participants who answered 22 with '4' or '5' (high Asian values) and 23 has either '1', '2', or '3', (low Western values) were classified as Asian-identified; those who answered 23 with '4' or '5' (high Western values) and 22 with either '1', '2', or '3' (low Asian values),

were classified as Western-identified; and those who answered 22 with '4' or '5' (high Asian values) and 23 with '4' or '5' (high Western values), were classified as 'bicultural'. Those who answered '1', or '2' for both 22 and 23 (low Asian and low Western values) were considered to be denying any identification and possibly alienated from both cultures (again, few fell into this category, n=4).

### Physical Activity Measures

Frequency of light, moderate, and vigorous physical activity was reported by participants who were asked questions in the form of:

**Do you do light physical activity for at least 20 minutes**

**(walking at a slow pace, light cleaning (dusting) or weeding the garden, etc)**

Less than once a week ☐

Once a week ☐

2-3 times per week ☐

4-5 times per week ☐

About every day ☐

Participants also stated the most common form of exercise for each type of physical activity so that the appropriateness of the activity to the question could be assessed. Many women also answered that they never did the type of physical activity in question. For all three types of physical activity this response was grouped together with the category 'less than once a week'. In addition, to achieve larger group sizes 'once a week' and '2-3 times per week' were grouped together as were '4-5 times per week' and 'about every day.' For multinomial logistic regression, in order to avoid an excessive number of zero cells because of the small number of women who do any regular vigorous physical activity, the variable representing frequency of vigorous physical activity had to be collapsed into two categories: Less than

once per week (representing women who do not take any weekly exercise) and 1-7 times per week (representing women who do some form of regular exercise).

### Body Mass Index

The Body Mass Index (BMI) was calculated using the midpoints of two measures each of standing height (cm converted to m) and weight (measured in kg) using the formula  $BMI = kg/m^2$ . In multinomial logistic regression, to avoid zero cell problems with the model, BMI was converted into a dichotomous variable (non-obese [ $BMI < 30$ ], obese [ $BMI \geq 30$ ]) based on the WHO's International classification of obesity by BMI (WHO Expert Consultation 2004)

### Lean Mass and Fat Mass

The variables representing measures of lean body mass and fat mass (both in kilograms) were calculated by the BodyStat 1500 machine to one decimal place. Both variables were normally distributed. Since there are no clear international standards for these measures, they were converted into z-scores and then divided into ordinal categories with adequate numbers in each category for use as independent variables in multinomial logistic regression.

### Sitting Height to Standing Height Ratio

Sitting height to standing height ratio was calculated using the midpoints of two measures each of standing height and sitting height in centimeters.

### **Qualitative Data Analysis**

Analysis of qualitative data typically does not follow a rigid formula in the way that quantitative data analysis does and, as one might expect, there are many different ways of analysing this type of data. Some ways of carrying out qualitative data analysis aim to be more objective, albeit with the acceptance that complete objectivity is not possible. Such approaches often use different researchers for the data collection and analysis stages (and



attempt to keep these stages distinct). Other approaches attempt to use the researcher's subjectivities as an asset in the analysis, as is typical in social anthropology. Furthermore, with qualitative research the distinction between the phase of data collection and data analysis is often less clear than in quantitative research. There is overlap between the two and the process is often non-linear, with ideas emerging during the data collection being explored in subsequent data collection. This too can be either embraced by researchers or reduced as much as possible by sticking to an original set of hypotheses.

In a grounded theory approach, far from being undesirable, this non-linearity and the emerging changes in perspective are embraced and considered the foundation of the analytic process. The aim of grounded theory is systematic generation of theoretical models based on the relationship of the different themes emerging from the text (Bernard and Ryan 1998). In the present study, the qualitative data (life history interviews, interview notes, and field notes) were analysed with the help of a conceptual coding scheme in which the categories I created were both grounded in the data and based on themes which began to emerge as locally important during the fieldwork. The scheme also aimed to tease out ideas relevant to addressing the research questions set out at the beginning of the study. This method of analysis is based on grounded theory as set out by Glaser and Strauss (1967).

I carried out all analyses myself in the hope that my insights as a researcher would guide and inform the analysis since I felt the long term immersion in the field gave me greater insight about local meanings, beliefs, and practices than an outside party who had not carried out fieldwork in the same place at the same time would have had. Had I been part of a larger local research team, an option rarely open to anthropology PhD students, I would have the benefit of the perspectives of others with different, but equally well-grounded, insight on the data and the greater opportunities for discussion of the data. The decision to analyse the data on my own was also influenced by concerns about confidentiality. With the methods I used to analyse most of the qualitative data, these data were not anonymisable before analysis and I found throughout the data collection that the participants were very concerned that they might be identifiable by their names or by the sound of their voices. This confirmed for me that it was best not to invite other parties to assist in the analysis.

The three forms of qualitative data (fieldnotes, life history interviews, notes from the questionnaire-based interviews) were analysed in somewhat different ways though the same thematic coding system was used for all qualitative data in the present study. Given the large

amount of audio-recorded qualitative data (both fieldnotes and life history interviews), the time implications of full transcription would have been far greater than the time available for data preparation, thus, an alternative way of analysing these data was developed.

Approximately 200 themes were identified in the analysis of the qualitative data. The interview notes were coded first. These hand-written notes from the questionnaires were typed into word documents, imported into NVivo, and coded using NVivo software. The fieldnotes were coded next using the same set of codes (which were added to at this and the next stage of the analysis). The fieldnotes were analysed as audiofiles, rather than being transcribed. I listened to each fieldnote audiofile twice to identify the themes in each. Since each file was short and there were many files, I kept track of the codes and the filenames in an Excel spreadsheet so that I could more easily find the files with particular themes associated with them.

As mentioned above, the stages of data collection and analysis of qualitative data are sometimes difficult to disentangle. Many of my fieldnotes contained mention of the fact that certain ideas and stories were recurring and seemed to be important themes. Sometimes my fieldnotes were primarily a way of recording how I thought important ideas related to one another or what explanations seemed to make sense for things I had seen, heard, or experienced. Thus, some of the content of the fieldnotes was more like early stage analysis than data per se. These early explanations, or theories, coming out of the fieldwork experience were explored both during the subsequent fieldwork and in the post-fieldwork analysis. Finally, the life history interviews were analysed. In order to extract themes and familiarise myself with the data, I listened repeatedly to the audio files and took pages of notes on paper to remind myself what ideas had come from listening to each file. I then went through those notes looking for themes. A few weeks later I went back through the audio files, listening to each again and noting in a document the time (hour: minute: second) that each theme came up.

Once all the passages or sections of audio recording relating to each theme had been identified I once again reviewed the data relating to the themes which seemed most important to write about in the PhD. This particularly helped me to develop an outline of the arguments I make in Chapter Seven based on important themes and the relationships between related themes. While writing the dissertation, I re-read the notes and listened to the sections of audio recording which related to each theme I wanted to write about in order to transcribe

quotations and to refresh my memory as to what people said or, in the case of my fieldnotes, what I had said when the memories were fresh in my mind. Quotations were used to illustrate key points using the words of participants themselves.

### **Ethical Considerations**

Ethical approval for the study was obtained from Durham University and from the Bradford NHS Local Research Ethics Committee. As a researcher I was concerned with several ethical considerations. Foremost in my mind were the intentions to gain informed consent, to protect confidentiality, and not to cause harm by distressing participants.

Informed consent for the interviews was fairly straightforward: upon agreement to participate each woman was given written informed consent documentation (an information sheet in English and Urdu and a consent form). All of the documents were also explained aloud in English or a South Asian language, since many women were illiterate or only semi-literate. Each woman was informed of her right to opt out of any section or at any point. The interpreter or I also explained to each participant that she could change her mind after the interview and that the questionnaire/recording would be destroyed or she would be given the questionnaire to destroy herself. One woman returned after an interview to the community centre where she was interviewed, after a conversation with her husband, and asked for and was given back her questionnaire.

With participant observation, informed consent was more difficult to achieve. Some aspects of participant observation involved just living in Bradford and spending time walking, shopping, and riding buses and trains. In these cases there was no practical way to gain consent from my fellow travellers, shoppers, or people on the street. When dealing with people in less public situations, I always introduced myself as a research student studying Pakistani women and tried to make it clear that part of the research involved just generally learning about women's lives. Women explained to their friends and family members that I was a researcher as well. Some people seemed turned off by this idea and did not spend time with me while others found it acceptable and were interested to take on the role of teaching me about Pakistani culture, Islam, Pakistani food, life in Bradford, or other things they thought I should know about. I was concerned that people sometimes thought of my research as only occurring when I was in the process of interviewing, so at times I tried to remind

people by saying something to the effect of, “I should write this down so I don’t forget it when I need to write about this research.”

In the questionnaire-based interviews, questions were asked about history of hysterectomy, pregnancy and childbirth (including pregnancies that did not result in a live birth), and other health history topics which are sensitive and potentially distressing to talk about. Similarly, in the life history interviews women discussed difficult life events which were sometimes upsetting to recall. Women were advised that the information would be kept confidential and that they had the right to refuse to answer questions or to withdraw from the study at any time. In each case, I was sensitive to any indications that a participant was upset or uncomfortable so that I could stop the interview or discussion at that point. Measurements were taken in private to minimise embarrassment, and participants were asked to consent verbally again when measurements were to be taken. To women who expressed emotional distress about their lives (such as problems with a husband or child) during the interview or who had a score over six on the anxiety scale or depression scale, I listened and tried to offer emotional support and also carefully suggested visiting the GP for a referral to counselling or other local mental health services.

I hoped that participation in the study might benefit women, thereby adding some good to make up for the risks they took in trusting me. In particular, I hoped that women would benefit from gaining insight into their own health from the information they received after anthropometry (each participant received her own health data including height, weight, BMI, body fat percentage, and accompanying information for its interpretation). Indeed, many women were eager to get this information though some women felt unhappy about their weight or BMI or body fat percentage and I suggested that they see their GPs. I also encouraged them not to worry but to take healthy action to address the situation suggesting local free exercise provision and healthy eating classes by the local Primary Care Trust and local community centres. I hoped to offer the opportunity for participants to share their life experiences, which can sometimes be beneficial in itself (Peel et al.2006; Hutchinson, Wilson, and Wilson 1994), and the opportunity to contribute to research which could help improve health services. However, some women told me afterward that the level of detail of the questions in the questionnaire-based interview made them feel exposed. I tried to revisit as many women as I could so that they could have greater opportunity to learn about me so that the relationship was not so one-sided. Although this was not possible in all cases, the fact that I spent many weeks in the same neighbourhoods and community centres meant that

most women saw me several times throughout the year and hopefully got a sense that I had not just run away with their information.

Measures were taken to ensure confidentiality, e.g. a separate room was used at the community centre; however, some women strongly preferred to have a close friend or family member sit with them while they were interviewed. However, no interviews were carried out in front of male family members or friends. In addition, once entered into the computer, data were coded with a numerical identifier. I will destroy the single document linking the names and numerical identifiers upon completion of the PhD.

### **Account of my 'self' in the research**

As many have argued, with ethnography there is a particular requirement for examination and an account of the role of the researcher's 'self' in the process of the research (Denscombe 2003; Gilchrist and Williams 1999; Davies 2008). The researcher is central in qualitative research and influences the focus, the collection, and the interpretation of data (Finlay 2002). As such, the position of ethnographic researcher can be considered to be in some ways analogous to that of other tools of the research such as stadiometers or weighing scales: no two tools are identical and the differences between them have implications for the data collected (although, of course, the difference between any two ethnographers is greater than that between any two stadiometers). In the case of the ethnographic researcher, what is required is both sensitivity to how the fact that the researcher is present and is known to be studying a group might affect the findings ('observation effects') (Denzin and Lincoln 1994), and also how the particular researcher's personal 'self' and her relationships with the research participants impact the findings.

The importance of the researchers' identities and the strategies they choose for gaining access to informants in the research has been highlighted by previous social researchers of British Pakistanis in Bradford in particular (Sanghera and Thapar-Björkert 2008; Bolognani 2007b). A number of writers have highlighted the difficulties encountered by researchers trying to account for the effect of their identities/personalities on their research (Okely 1994; Finlay 2002; Denscombe 2003). They have also noted that there are not clear guidelines for how to carry out this reflection, what to include when writing texts, and how to strike a balance between accounting for the self and focusing on the research participants (Finlay 2002; Okely

1994; Davies 2008). As mentioned above, the ontological stance I have taken is that the social world, rather than being purely static and ‘out there’, is, in some meaningful sense, co-created and negotiated by the people who live in it. This does not exclude the research process; the conversations I had with British Pakistanis about their lives, beliefs, opinions, etc. were part of this co-creation. Since I describe the informants/research participants in various ways, I should also reflect on and describe (in relevant areas) aspects of myself and my actions in the context of this research.

My identities and the ways in which these were understood by women in Leeds and Bradford played a clear role in trust and rapport building. I am a recent immigrant to Britain, female, and a non-white person. While in some ways, the fact that I am not Pakistani makes me an ‘outsider’, Collins (2002) has argued that the insider/outsider distinction is something of a false dichotomy, suggesting that anthropologists are always both insiders and outsiders to varying degrees. Collins points to the idea that each of us always has multiple identities. The fact that I am a non-white immigrant opened up possibilities for people to talk about their experiences in this country and migration as well as about their (mostly negative) perceptions of white British people, which they often did, though most knew that I have a white British husband. Similarly, Sanghera, who is a Sikh of Indian descent, and Bolognani, who is Italian, both found that people emphasised the commonalities between themselves and the researcher and that this gave them an advantage in accessing research participants and building trust (Sanghera and Thapar-Björkert 2008; Bolognani 2007b). In both cases, this involved both parties (the researcher and the research participant) being something other than white British, and in Sanghera’s case the fact that he and his interviewees were ‘Asian’ and shared a mother tongue was emphasised.

My marital status was also something of a key influence in several ways. As I will discuss in Chapter Seven, I discovered during the fieldwork that women who are unmarried are not supposed to know about sex and it is not considered appropriate to talk to them about it or related topics. Thus, being married enabled me to be able to talk about a wider range of topics related to reproduction. The fact that I am not yet a mother was sometimes an issue because people sometimes disapproved of my lack of children, and also because I was asking about pregnancy, breastfeeding, etc. which I have not experienced personally. However, this boundary was less significant than the married/unmarried boundary, though I might have collected different data had I been a mother.

The fact that I have a Roman Catholic religious background provided some distance between me and most of the women interviewed, since they most often identified as Muslim, however it also meant to many women that I was a ‘person of the book’ meaning that I was not a polytheist and that I followed an Abrahamic religion (a category which includes Islam). Some people commented that Catholicism is a stricter group within Christianity and therefore better by their standards. Bolognani (2007b), who is a Roman Catholic, found that she was similarly perceived by Pakistanis in Bradford. My patrilineal connection to the Arab world also made some women feel as though they had something important in common with me and I found that Pakistanis most commonly perceive a high degree of cultural continuity between Pakistan and the Arab world.

While it was clear that being a married, non-white woman, with a part-Arab background, from a monotheistic religion was critical in accessing the women with whom I needed to interact, there was also an important distance between us. This distance allowed me to be more easily forgiven or not held accountable for asking questions about things which British Pakistani women my age should already understand or should know not to ask about. Indeed, a few times women scolded the interpreter for asking a question since my interpreter, as a Pakistani Muslim woman, should have known better than to repeat my question. However, this distance did not extend very far. For instance, I was never treated as an ‘honorary male’ in the way described by some ethnographers (Bolognani 2007b; Mandel 2003; Warren 1988). My behaviour and appearance were generally judged according to British Pakistani standards and when I was seen to be violating norms related to my gender, (e.g. travelling alone by bus and train around West Yorkshire, wearing a top and trousers and sturdy shoes rather than a *shalwaar kameez* and more feminine shoes), informants/research participants showed their disapproval and sometimes scolded me. This treatment, along with other ways in which my behaviour and appearance were moulded, were part of what has been referred to as ‘bodily training’ which anthropologists, particularly female anthropologists, experience during fieldwork in order to fit in and which allows the ethnographer to develop a sense of what it is to be a woman in that village/society/population (Delaney 1991; Lamb 2000).

My American accent and the fact that I was raised in the United States, intersecting as it did with my other characteristics, played an interesting role. While some saw me as like their family members who had emigrated from Pakistan to the US instead of to the UK, others perceived me as more American. One woman’s husband asked me directly whether I worked for the CIA because I sounded American and was interested in activities going on in

Bradford. This man subsequently seemed to trust me after I had spent many hours with his wife, sister-in-law, and daughters and he had the chance to have several conversations with me. Several times during the fieldwork people commented that if I had been a white American it would have been harder for me because people would have associated me with those actions of the US government which they disapproved of, but, instead, they saw me in the same way that they saw themselves in relation to elements of British foreign policy, i.e. not personally responsible.

Sanghera and Thapar-Björkert (2008) and Bolognani (2007b) raise the issue that people they approached and interviewed seemed to feel over-researched. Bolognani describes being given the same list of people to interview by three different gatekeepers who told her the people on the list could tell her “everything you need to know” (2007b:289). I rarely encountered the idea that Bradford was over-researched and I never heard this in Leeds, possibly because little research on British Pakistanis in Leeds has been carried out. There are several explanations which together may account for this. In Bradford, I carried out a lot of work in an area (Keighley) which has been less often researched than other areas. The demographic group I was approaching was also quite different to that targeted by most studies. I was interested in speaking with middle-aged women, whereas Sanghera and Bolognani (along with most of the research reviewed in the previous chapter) appear to have conducted all or most of their interviews with younger people of both genders.

My strategies for meeting and engaging with people ultimately differed from those of Sanghera and Bolognani. Like Sanghera, I found that community leaders and ‘official’ gatekeepers like health development workers or others working in local organizations in Bradford were not very helpful and often did not return phone calls. Like both Sanghera and Bolognani, I found that official letters did not open doors either. In contrast, more informal gatekeepers were more helpful and several introduced me to many people in their personal networks. It may be the sense that Bradford is over-researched that caused the ‘official’ gatekeepers to be less helpful, but I found in the course of the research that other concerns were more pressing upon them<sup>11</sup>. A strategy which was important in helping me to gain rapport and meet women was volunteering in two community centres for women where many British South Asian women attended.

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<sup>11</sup> Many gatekeepers were employed in the community and voluntary sector, which was experiencing major upheaval in Leeds and Bradford as funding for community and voluntary organizations became more difficult to obtain and local organizations began to compete for scarce funding from national and local funding bodies.



Possibly the most significant difference between the strategies used by Sanghera and Bolognani and my own was that some of the most important informal gatekeepers were the interpreters who worked with me. Often also key informants, these women helped me to recruit women into the study, acting in their own financial interest but also out of a desire to help me with the research. The decision to pay women of Pakistani origin to act as interpreters helped me to meet women who would have been much more difficult for me to access without their help, especially women with no education who spoke no English and rarely visited community centres or community groups. While getting the chance to interview a group of women usually left out of other studies was a very important positive addition to the research, the use of paid interpreters which made this possible had some negative effects.

With the interpreters, in some sense I was an ‘employer’, and certainly someone with clear research goals and who needed to direct areas of the project. However, at the same time, most of my interpreters were older than I was and the majority of our interactions were therefore informed by their seniority within a Pakistani worldview. Those occasions where I needed to issue instructions in accordance with my research priorities therefore created an ambiguous tension. However, this became a strength of the research in terms of its depth by providing an opportunity for me to learn about how women managed tensions such as these which inevitably develop when people’s lives are interconnected, as theirs often are. It thus informed my thinking about the complexities in women’s relationships with their friends and family members.

Temple and Edwards (2002) have argued that it is important to consider the role of interpreters because of their influence on the accounts collected. In Temple and Edwards’ research, interpreters are deliberately treated as key informants so that their perspectives and positions with respect to the women interviewed can be understood. While the series of events by which the women who worked as interpreters in this research came to be key informants did not occur in the same way as that described by Temple and Edwards, the results were similar. The fact that the interpreters were often personally connected with interviewees meant that there may have been reluctance on the part of some interviewees to give responses which might have made the interpreter uncomfortable. While this cannot be discounted as a factor influencing the research, this effect would have been reduced by the diverse range of interpreters used. My experience suggests that women often did find ways to make their point, even where this could have been perceived as a slight against the

interpreter. On such occasions the interpreters were always polite enough to agree with the interviewee, even if afterwards they privately voiced disagreement or disapproval. Through knowing and working closely with them over time, as well as through improving my language skills and knowledge of Pakistani culture, I could understand better the interactions between the interviewees and the interpreters and consider their impact. The use of interpreters from very different educational, regional, and class backgrounds also helped to limit the effect of particular interpreters on what I could learn in the research.

Also in contrast to other avenues, meeting women through interpreters resulted in some immediate enthusiastic invitations to women's homes, even when the women were the merest acquaintances of the interpreter or even perfect strangers. Some of these women did not speak much English but seemed very keen to have me visit despite the fact that I was a researcher and, although I did not realise it at the time, somewhat strangely attired from their perspective. The invitations were something of a surprise to me because I had heard that Pakistani women in Bradford and certain areas of Leeds were very closed and suspicious when meeting new people. Indeed, being a guest in women's homes took up the majority of my time during the fieldwork, although visiting a woman did not always result in an interview.

For middle-aged Pakistani women in West Yorkshire, the ability to act in the role of host is extremely important. Because there are few acceptable alternative locations in which to socialise, one's home and the homes of one's friends are the most important spaces. Offering hospitality is considered to be a virtuous activity among Pakistanis and other South Asians. As such, the chance to be a host is particularly coveted, and frequently acting in that role is a point of pride, and provides the opportunity to signal high social status as well as to strengthen friendships. Thus, the interviews in the homes of interviewees often seemed to be part of the offering of hospitality, along with the cups of tea, meals, or snacks I was given. While I was initially concerned that women would feel they had to give an interview because I was their guest, I found that women had many ways of politely refusing an interview, while still offering hospitality.

I also found that there is normally something of a cost to be paid for gaining the opportunity to act in the desired role of host. British Pakistani women and their family members must not be seen to violate important social norms if they are to maintain the friendships in which women visit them. My visits were not dependent on this type of conformity and I found I

was especially warmly greeted by women who were on the periphery of social networks perhaps because of the actions of themselves or their family members. Noticing this marginality helped me to understand how women drew boundaries between themselves and other women and sensitised me to the impact of social support or lack thereof. I also found that discussing menopause in this particular context was not quite as unusual as it might have been, as I discuss in Chapter Five, since middle-aged women already discuss menopause while visiting or being visited by other women (as long as no men or children are around). It was in this context of being a guest in women's homes, rather than an alien situation, that I asked the questions of women about their lives and the details of their experiences of the menopausal transition. It is within this context in a wider sense, that of the social importance of having guests and all that it entails, which I learned about through being a guest, that some of the answers I have found for my research questions make most sense.

The topic of the research itself played a role in how I was able to develop relationships with women. Having menopause (or 'women's things' as people sometimes preferred to call the topic of the research) as a central focus, rather than political Islam, terrorism, or other topics which might to be related to the 'bad image' of British Pakistanis, seemed to make people feel as though the research was non-threatening, though some thought of it as more biomedically-oriented than it was intended. However, women who met with me more than once, and my key informants in particular, understood that I was interested in their ideas, beliefs, and practices, whether or not they fitted with medical knowledge. Contrary to what I had imagined going into the field, the fact that I was not affiliated with the NHS in particular was something of an advantage in some cases, since many women told me that they felt neglected, mistreated, or ignored by NHS staff. Initially, I had thought that such an affiliation might have made me seem more credible and important but, in fact, it could have also had some negative repercussions.

Throughout the data collection process I tried to remain sensitive to the impact my own interest in, and prior knowledge of, menopause had on my interactions with people in the field and on the research outcome. Since I have not experienced menopause myself and, before the research began, I had heard almost nothing from any women about their experience of it, all I knew was what I had read in scholarly articles and books. For the most part, I pushed aside what I had learned from my reading about menopause and tried to engage in open-minded listening to how people thought about and experienced this transition. When people asked me about menopause, I expressed my own belief that there was still a lot to be

learned about the topic and I was interested in learning from them as well as from other sources.

On the occasions in which I was asked to give presentations about menopause, my presentation was simple. I gave the biomedical explanation for menstruation and menopause, with reference to the ovaries, the endometrium, and ovarian hormones and I invited women to have a discussion with me about it and to ask questions. In the discussions I emphasised that many questions about menopause were still unanswered (and invited opinions from the women attending the session) but explained current biomedical explanations for experiences such as hot flushes. While I was concerned that giving these explanations might disrupt my own ability to learn about ideas which did not fit into the biomedical model of the body, there appeared to be little impact. Women who had seen my presentations talked about their bodies in ways which were not strictly biomedical, sometimes emphasising the impact of God, mystical power, 'dirty' blood backing up in the body, or hot/cold properties of foods on their reproductive systems. In some cases, this was because women's ideas about the human body were syncretic and already included some biomedical concepts; in other cases, it may have been because the women didn't think biomedical ideas trumped their own knowledge, which many saw as rooted in Islam. It should also be noted that only a very small number of the women interviewed had attended any of the sessions.

Overall, I found the way I was perceived in terms of my composite identities, along with the approach of using interpreters as gatekeepers, helped me to get closer to women involved in the study. It was also helpful that my main activity in the fieldwork (visiting women in their homes) was something which women were more inclined to understand and of which they generally approved. While the closeness I achieved provided some challenges (I certainly found being reprimanded for 'inappropriate' behaviour challenging), it added to a deeper understanding of British Pakistani women's lives which has helped me to make sense of their perceptions of menopause and all aspects of their experience of it.

## CHAPTER FOUR – THE TIMING OF MENOPAUSE

As discussed in Chapter One, many studies have investigated the predictors of the timing of menopause and these studies have most often produced inconsistent findings, usually with little attempt made to understand the potential differences in how these variables might operate in each context. This chapter aims to test hypotheses linking timing of menopause to biological and social factors in both early and later life. It also tests the independence and relative strength of these associations through multivariable analyses and attempts to control for confounders. Finally, it discusses the results in terms of the ethnographic findings of the present study and previous research.

Recent epidemiological work has emphasised the importance of early life experiences and the lifespan approach for understanding experience of disease and variation in human physiology (Kuh and Ben Shlomo 1997; Barker 2003). The timing of menopause may be influenced by factors in infancy and childhood that are known to influence age at menarche and adult ovarian function (Ellison 1996). It is likely that environmental factors may influence the development of the reproductive system as early as the fetal period and partly determine the extent of prenatal and perinatal follicular atresia. Furthermore, Hardy and Kuh (2002b) have suggested that the impact of environmental influences in adult life on the timing of menopause may be greater in women whose initial follicular reserve is small. Some previous studies have found that indicators of better early life growth (Hardy and Kuh 2002a; Cresswell et al. 1997; Lawlor, Ebrahim, and Smith 2003), nutrition (Elias et al. 2003), and social circumstances (Hardy and Kuh 2005; Shinberg 1998; Elias et al. 2003) predict later menopause, though, as noted in Chapter One, results have not been consistent.

Additionally, several studies have found that female offspring of mothers of advanced ages experience reduced fecundity (Smits et al. 1999; Smits et al. 2002) and menstrual disorders (including long menstrual cycles and short intervals between menstrual bleeds) (Smits et al. 1997). These associations have been variously attributed to “oocyte overripeness” as a result of longer menstrual cycles in older women (Smits et al. 1995), accumulated damage to oocytes in older women (Volarcik et al. 1998; de Bruin et al. 2004), possibly via oxidative phosphorylation (Wilding et al. 2005) or differences in reproductive hormone levels in older women (Wang and vom Saal 2000).

Following on from these ideas, I hypothesised that early life factors which indicate better environment would be associated with later menopause. These include:

- greater height
- a larger standing height to sitting height ratio
- early migration to the UK (at/before menarche)
- a younger maternal age at the time of the participant's birth
- an earlier age at menarche
- larger reported body sizes in both childhood and adolescence.

As reviewed in Chapter One, the body of research on various markers of social status in adulthood as predictors of menopausal age has been inconsistent. However, studies which have found a significant association between indicators of social status and menopausal age have frequently found that higher status is associated with a later menopausal age (Ayatollahi, Ghaem, and Ayatollahi 2005; Do et al. 1998; Ortiz et al. 2006; Cagnacci et al. 2005; Sievert and Hautaniemi 2003; Brett and Cooper 2003; Özdemir and Çöl 2004; Johnston 2001; Reynolds and Obermeyer 2005; Lawlor, Ebrahim, and Smith 2003; Hardy and Kuh 2005). I therefore hypothesised that markers of high social status would be associated with later menopausal age including:

- higher occupational social class
- husbands with higher occupational social class
- higher self reported ladder status
- a higher education level
- a history of having worked outside the home.

Aspects of reproductive history have been hypothesised to be associated with timing of menopause under two slightly different hypotheses relating to loss or conservation of ovarian follicles. One, the Incessant Ovulation Hypothesis, focuses on the role of ovulation in loss of follicles. This hypothesis states that any factor that conserves ovarian follicles by stopping ovulation will delay menopause, and any factor that increases the number of follicles which are ovulated hastens menopause (Cramer, Xu, and Harlow 1995). The second hypothesis looks to hormonal influences on follicular development, and states that any factor which suppresses FSH will conserve follicles, since high FSH concentrations are hypothesised to

accelerate follicle growth (te Velde et al. 1998). Evidence of low fecundity has also been considered to have a potential association with menopausal age, as it may indicate irregular menstrual cycles or other ovarian dysfunction that may be associated with earlier menopause. In line with this logic, I hypothesised that factors which conserve ovarian follicles and/or indicate a lack of ovarian dysfunction would be associated with later menopause, including:

- a greater number of pregnancies
- a greater number of children
- a longer lifetime experience of breastfeeding
- use of oral contraceptives
- a shorter time from marriage to first birth.

Many studies have found a significant association between early menopause and exposure to tobacco (usually via cigarette smoking) (Cagnacci et al. 2005; Parazzini, Negri, and La Vecchia 1992; Bromberger et al. 1997; Elias et al. 2003; Palmer et al. 2003; Sievert and Hautaniemi 2003; Reynolds and Obermeyer 2001; Shinberg 1998; Nagata et al. 2000; Brett and Cooper 2003; Özdemir and Çöl 2004; Lawlor, Ebrahim, and Smith 2003; Do et al. 1998; Nagel et al. 2005; Ayatollahi, Ghaem, Ayatollahi 2005). The process of metabolising tobacco is thought to result in the production of substances toxic to ovarian follicles which could lead to early menopause (Harlow et al. 2000). Based on this, I hypothesised that exposure to tobacco either through the participant's own use or via second-hand smoke in the home would be associated with earlier menopause.

Finally, based on a comparison of the results of previous studies, which indicates that white British women have a later menopause than Pakistani women living in Pakistan, I hypothesised that indicators of less acculturation would be associated with lower menopausal age (indicating that women who are less acculturated have menopausal ages more like that of women living in Pakistan) including:

- low Suinn Lew-Asian Self Identity Acculturation (SL-ASIA) scale total score
- SL-ASIA results indicating Asian behavioural competency
- SL-ASIA results indicating Asian values

- having been born in Mirpur<sup>12</sup>
- being from the *Choudhary Jatt biradari*
- being in a consanguineous marriage.

From the evolutionary standpoint of the Adaptive Onset Hypothesis, of the associations predicted above, the most important should be those relating to factors which indicate whether or not investment in new offspring would be advantageous. Thus, the associations which should be strongest (since they are hypothesized to be part of an evolved mechanism for influencing reproductive investment) are those that indicate social status since this is related to resources (one of Kuhle's specific predictions) and low parity or nulliparity (another of Kuhle's predictions). Thus, the relationships of these variables to timing of menopause should be strongest and should be independent of other relationships.

Tables 4.1 and 4.2 show descriptive statistics for all variables for the sub-sample of participants for whom ordinal age at menopause is available.

**Table 4.1: Descriptive statistics for continuous variables**

Variable	N	Mean $\pm$ SD	Median	Range	Interquartile Range
Age at interview (years)	95	54.21 $\pm$ 3.72	54.33	41.25-61.17	52.00-56.83
Height (cm)	88	155.2 $\pm$ 5.1	154.8	144.1-166.8	151.5-158.3
Sitting Height to Standing Height Ratio	85	0.52 $\pm$ 0.01	0.52	0.50-0.56	0.52-0.54
Number of Pregnancies	93	5 $\pm$ 3	5	0-12	4-7
Number of Children	90	5 $\pm$ 2	5	1-9	3-7
Lifetime breastfeeding (months)	81	31.2 $\pm$ 42.4	12.5	0.0-216.0	2.3-45.8
Ladder Status	95	4.7 $\pm$ 1.9	4.5	1.0-10.5	3.5-5.5

<sup>12</sup> The final three indicators of low acculturation from this list were chosen based on ethnographic data (from the present study) indicating that these were markers of low acculturation.



**Table 4.2: Descriptive statistics for categorical and ordinal variables**

<b>Variable</b>	<b>N (%)</b>
Timing of Natural Menopause (years)	n=95
36-48	28 (29.5)
49-50	21 (22.1)
≥ 51	46 (48.4)
Timing of Migration	n=90
On/before menarche (incl. UK born)	6 (6.7)
After menarche	84 (93.3)
Menarcheal age (years)	n=85
< 12.66	13 (15.3)
12.66-16.04	61 (71.8)
> 16.04	11 (12.9)
Mother's Age at Participant's Birth (years)	n=41
13-20	19 (46.3 )
21-23	6 (14.6)
24-30	7 (17.7)
31-34	0 (0.0)
35-47	9 (22.0)
Body Size in Childhood	n= 95
Larger than same age peers	16 (16.8)
Same size as same age peers	40 (42.1)
Smaller than same age peers	39 (41.1)
Body Size in Adolescence	n=95
Larger than same age peers	12 (12.6)
Same size as same age peers	37 (38.9)
Smaller than same age peers	46 (48.4)
Highest Level of Education Achieved	n=94
No formal education	37 (39.4)
≤ 5 years of schooling	14 (14.9)
6-10 years of schooling	29 (30.9)
≥ 11 years of schooling	14 (14.9)
Ever worked outside the home	n=95
No	63 (66.3)
Yes	32 (33.7)
Own Social Class	n=95
Never worked	62 (65.3)
I and II	12 (12.6)
IIIN and IIIM	5 (5.3)
IV and V	16 (16.8)

Husband's Social Class	n=81
Never worked	25 (30.9 )
I and II	19 (23.5)
IIIN and IIIM	30 (37.0)
IV and V	7 (8.6)
Ladder Status	n=95
High (< 2.5)	11 (11.6)
Moderately High (2.5-4.5)	39 (41.1)
Moderately Low (5.0-7.0)	37 (38.9)
Low (7.5-10.5)	8 (8.4)
SL-ASIA Score in three categories	n=95
Highly Asian identified (1-1.49)	55 (57.9)
Moderately Asian indentified (1.5-1.9)	24 (25.3)
More Biculturally identified ( $\geq 2.0$ )	16 (16.8)
SL-ASIA Values Score	n=83
Asian values	60 (75.9)
Bicultural values	19 (24.1)
SL-ASIA Behavioural Competencies Score	n=87
Asian Behavioural Competency	61 (70.1)
Bicultural Behavioural Competency	26 (29.9)
Consanguineous Marriage	n=95
No, not related to her husband	30 (31.6)
Yes, related to her husband	65 (68.4)
Born in Mirpur District, Azad Kashmir, PK	n=89
No	54 (60.7)
Yes	35 (39.3)
<i>Choudhary Jatt Biradari</i>	n=94
Yes	21 (23.1)
No	70 (76.9)
Ever Use Tobacco	n=95
No	85 (89.5)
Yes	10(10.5)
Any Family Member Smoke Inside House	n=94
Yes	26 (7.7)
No	68 (71.6)
Ever Use Oral Contraceptives	n=95
No	67 (70.5)
Yes	28 (29.5)

Time from Marriage to First Birth (years)	n=86
< 2	27 (31.4)
2-3	23 (26.7)
≥ 4	36 (41.9)
Time from Marriage to First Birth (years) (Never Used Birth Control)	n=40
< 2	12 (30.0)
2-3	7 (17.5)
≥ 4	21 (52.5)

The results of ordinal logistic regression of timing of menopause with continuous predictor variables in univariable models are presented in Table 4.3. Results of ordinal logistic regression analyses should be interpreted in keeping with the fact that coefficients in ordinal logistic regression refer to the change in the predicted cumulative probabilities for the categories of the response, or outcome, variable for a one-unit change in the independent variables rather than the change in the independent for each unit of increase or decrease in the dependent variable. The results of ordinal logistic regression using continuous independent variables did not reveal any significant predictors of timing of menopause. Ladder status was not included below because the Test of Parallel Lines was significant when it was included, a sign of a violation of the key assumption of ordinal logistic. Ladder status was therefore tested in Multinomial Logistic Regression but violated the assumption of linearity in the logit and was transformed into a dichotomous variable (results in Table 4.4).

**Table 4.3: Continuous Predictors of the Timing of Menopause in Ordinal Logistic Regression in Univariable Models**

Variable	N	Coefficient	95% CI	p value
Height (cm)	88	0.002	-0.057, 0.060	0.958
Sitting Height to Standing Height Ratio	85	-6.249	-26.320, 13.821	0.542
Number of Pregnancies	93	-0.040	-0.148, 0.067	0.464
Number of Children	90	-0.014	-0.151, 0.123	0.842
Lifetime breastfeeding (months)	81	-0.005	-0.012, 0.001	0.099
Ladder Status	95	-	-	-

The results of multinomial logistic regression of ordinal age at menopause on the dichotomous version of ladder status are presented in Table 4.4. A four category ordinal version of the variable was also created and tested (results not shown). While the four category ordinal version of the variable would seem better since less information is lost in transforming ladder status into a four-category ordinal variable, the dichotomous version of ladder status seemed more salient based on the interviews, since the important thing for many women seemed to be whether they placed themselves above or below the exact halfway point. The four-category ordinal version of ladder status was not significantly associated with timing of menopause in either ordinal logistic regression or multinomial logistic regression (results not shown). The dichotomous version of ladder status, however, was significantly associated with timing of menopause. The odds of being in the earlier menopause group for a woman who placed herself higher on the ladder were 8.4 times (95% CI: 1.764, 39.585) those of a woman who placed herself lower on the ladder. The dichotomous version of ladder status was a better predictor of timing of menopause based on the likelihood ratio chi-squared statistic (a measure of model fit) and the p values of both the models. There was no significant difference between women who rated themselves higher and those who rated themselves lower on the ladder in terms of odds of being aged 49-50 at menopause versus being aged 51 or older at menopause.

**Table 4.4: Ladder Status as a Predictor of the Timing of Menopause in Multinomial Logistic Regression**

Variable	Categories	N	Menopausal Age 36-48 years*			Menopausal Age 49-50 years*		
			Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value
Ladder Status	≤ 5 <sup>th</sup> rung (high status)	66	8.357	1.764, 39.585	<b>0.007</b>	0.857	0.301, 2.444	0.773
	>5 <sup>th</sup> rung (low status)	29	-	-	-	-	-	-
	Model <sup>†</sup>	95	-	-	-	-	-	<b>0.002</b>

<sup>†</sup> Model p value is from Likelihood Ratio Test

\* Menopausal Age 51+ years is the reference category of the dependent variable.

The results of ordinal logistic regression of ordinal age at menopause on categorical and ordinal predictors in separate univariable models are presented in Table 4.5. There were no predictors which were significant at the 0.05 level. Taken together with Table 3, the results showed no significant relationship between timing of menopause and any of the following: work history and occupational social class (social class, husband's social class, ever employed), exposure to tobacco (ever use tobacco, any family member smoke inside house), most variables related to early life (mother's age at participant's birth, age at menarche, body size in childhood, height, timing of migration, and sitting height to standing height ratio), or most aspects of reproductive history (number of children, number of pregnancies, time from marriage for first birth). Several independent variables were somewhat close to significance ( $p < 0.10$ ) in their separate models, including: ever use oral contraceptives, lifetime duration of breastfeeding, body size in adolescence, *biradari*, and SL-ASIA Score.

**Table 4.5: Categorical and Ordinal Predictors of the Timing of Menopause in Ordinal Logistic Regression (univariable models)**

Variable	Categories	N	Coefficient	95% CI	p value
Timing of Migration	On/before menarche (incl. UK born)	6	0.059	-1.101, 1.219	0.921
	After menarche	84	-	-	-
	Model	-	-	-	0.921
Menarcheal age (years)	<12.66	13	0.284	-0.941, 1.509	0.650
	12.66-16.04	61	-0.160	-1.084, 0.764	0.734
	>16.04	11	-	-	-
	Model	-	-	-	0.612
Mother's Age at Participant's Birth (years)	13-20	19	-0.039	-1.103, 1.026	0.943
	21-23	6	0.708	-0.939, 2.355	0.399
	24-30	7	0.346	-1.080, 1.771	0.634
	35-47	9	-	-	-
	Model	-	-	-	0.721

Body Size in Childhood	Larger than same age peers	16	0.139	-0.646, 0.925	0.728
	Same size as same age peers	40	0.474	-0.154, 1.103	0.139
	Smaller than same age peers	39	-	-	-
	Model	-	-	-	0.323
Body Size in Adolescence	Larger than same age peers	12	0.049	-0.788, 0.886	0.909
	Same size as same age peers	37	0.628	-0.014, 1.271	0.055
	Smaller than same age peers	46	-	-	-
	Model	-	-	-	0.130
Highest Level of Education Achieved	No formal education	37	0.201		0.659
	≤5 years of schooling	14	-0.164		0.754
	6-10 years of schooling	29	-0.340		0.448
	≥ 11 years of schooling	14	-	-	-
	Model	-	-	-	0.466
Ever worked outside the home	No	63	-0.151	-0.758, 0.455	0.625
	Yes	32	-	-	-
	Model	-	-	-	0.624
Own Social Class	Never worked	62	-0.003	-0.767, 0.761	0.993
	I and II	12	0.248	-0.848, 1.342	0.658
	IIIN and IIIM	5	-0.099	-1.463, 1.264	0.887
	IV and V	16	-	-	-
	Model	-	-	-	0.953
Husband Social Class	Never worked	25	-0.745	-2.241, 0.751	0.329
	I and II	19	-1.055	-2.561, 0.450	0.169
	IIIN and IIIM	30	-0.794	-2.270, 0.682	0.292
	IV and V	7	-	-	-
	Model	-	-	-	0.500

SL-ASIA Score in three categories	Highly Asian identified (1-1.49)	55	-0.831	-1.785, 0.123	0.088
	Moderately Asian identified (1.5-1.9)	24	-0.737	-1.781, 0.306	0.166
	More Biculturally identified ( $\geq 2.0$ )	16	-	-	-
	Model	-	-	-	0.162
SL-ASIA Values Score	Asian values	60	-0.159	-0.883, 0.565	0.667
	Bicultural values	19	-	-	-
	Model	-	-	-	0.669
SL-ASIA Behavioural Competencies Score	Asian Behavioural Competency	61	0.268	-0.341, 0.878	0.388
	Bicultural Behavioural Competency	26	-	-	-
	Model	-	-	-	0.403
Consanguineous Marriage	No, not related to her husband	30	0.389	-0.251, 1.030	0.234
	Yes, related to her husband	65	-	-	-
	Model	-	-	-	0.218
Born in Mirpur District, Azad Kashmir, PK	No	54	-0.242	-0.856, 0.372	0.439
	Yes	35	-	-	-
	Model	-	-	-	0.434
<i>Choudhary Jatt Biradari</i>	Yes	21	0.698	-0.078, 1.474	0.078
	No	70	-	-	-
	Model	-	-	-	0.053
Ever Use Tobacco	No	85	-0.038	-0.964, 0.889	0.936
	Yes	10	-	-	-
	Model	-	-	-	0.936
Any Family Member Smoke Inside House	Yes	26	0.145	-0.505, 0.796	0.661
	No	68	-	-	-
	Model	-	-	-	0.660

Ever Use Oral Contraceptives	No	67	-0.549	-1.227, 0.129	0.112
	Yes	28	-	-	-
	Model	-	-	-	0.095
Time from Marriage to First Birth (years)	< 2	27	-0.055	-0.780, 0.671	0.883
	2-3	23	-0.413	-1.126, 0.300	0.256
	≥ 4	36	-	-	-
	Model	-	-	-	0.502
Time from Marriage to First Birth (years) (Never Used Birth Control)	< 2	12	0.321	-0.745, 1.386	0.555
	2-3	7	-0.591	-1.658, 0.475	0.277
	≥ 4	21	-	-	-
	Model	-	-	-	0.374

Predictors which were significant or close to significance ( $p < 0.10$ ) (other than ladder status) were included in a multivariable model to assess which had independent relationships with the timing of menopause, and the results are presented in Table 4.6. After controlling for other factors (the other predictors in the model), two relationships with timing of menopause were statistically significant: 1) *Choudhary Jatt biradari* and 2) SL-ASIA Score. First, women who were rated highly Asian according to their responses to the SL-ASIA questionnaire were significantly younger at menopause than those who were rated more bicultural ( $p < 0.05$ ). Second, women who were from the *Choudhary Jatt biradari* were significantly older at menopause than women from all other *biradaris* ( $p < 0.05$ ). The other predictors were not significant at the 0.05 level in one or both of the multivariable models.

**Table 4.6: Predictors of the Timing of Menopause in a Single Multivariable Ordinal Logistic Regression Model**

Variable	Categories	N	Coefficient	95% CI	p value
Ever Use Oral Contraceptives	No	54	-0.496	-1.240, 0.249	0.192
	Yes	25	-	-	-



Lifetime breastfeeding (months)	-	79	-0.003	-0.009, 0.004	0.454
<i>Choudhary Jatt Biradari</i>	Yes	19	1.034	0.194, 1.875	<b>0.016</b>
	No	60	-	-	-
Body Size in Adolescence	Larger than same age peers	10	-0.397	-1.408, 0.614	0.441
	Same size as same age peers	34	0.184	-0.528, 0.896	0.613
	Smaller than same age peers	35	-	-	-
SL-ASIA Score in three categories	Highly Asian identified (1-1.49)	46	-1.310	-2.552, -0.068	<b>0.039</b>
	Moderately Asian identified (1.5-1.9)	22	-0.745	-2.043, 0.553	0.261
	More Biculturally identified ( $\geq 2.0$ )	11	-	-	-

Model  $p=0.025$

In order to assess the predictive power of ladder status along with the other significant predictors of timing of menopause, it was necessary to use a multivariable binomial logistic regression model, since ladder status had violated the assumption of the ordinal logistic regression model. The results are presented in Table 4.7. Lifetime breastfeeding, body size in adolescence, and oral contraceptive use were not included in the multivariable model because they did not reach statistical significance. A multinomial logistic regression model was also tested (results not shown) but because of relatively sparse data, primarily in the middle menopausal age group, the odds ratios were extreme. Following the suggestion by Garson (2009a) that categories be collapsed together to avoid the problem of sparse data, this middle menopausal age category was collapsed together with lower menopausal age group (36-48 years). Since multinomial logistic regression does not take account of the ordinal nature of these age groups, this collapsing of groups does not represent an important loss of ordered data, as other category collapsing often would.

**Table 4.7: Multivariable Model of Predictors of the Timing of Menopause in Binary Logistic Regression**

Variable	Categories	N	Odds Ratio*	95% CI	p value
<i>Choudhary Jatt Biradari</i>	Yes	21	0.225	0.069, 0.729	<b>0.013</b>
	No	70	-	-	-
Ladder Status	≤ 5 <sup>th</sup> rung (high status)	62	3.385	1.214, 9.435	<b>0.020</b>
	>5 <sup>th</sup> rung (low status)	29	-	-	-
SL-ASIA Score in three categories	Highly Asian identified (1-1.49)	53	4.965	1.254, 19.667	<b>0.023</b>
	Moderately Asian identified (1.5-1.9)	24	1.462	0.352, 6.069	0.601
	More Biculturally identified (≥ 2.0)	14	-	-	-

Model p=0.005

\* Odds of being in the younger menopausal age group (36-50 years) versus the older menopausal age group (51+ years)

## **Discussion**

The main findings of these analyses are (1) that British Pakistani women from the *Choudhary Jatt biradari* were more likely to have a later menopause than women from other *biradaris*, (2) those who rated themselves high on the ladder of social status were more likely to have an earlier menopause, and (3) those who were less acculturated were also more likely to have an earlier menopause. Each of these associations was independent of the others in the final model. Only one of the hypotheses stated at the outset was supported by the data: that less acculturation would be associated with an early menopause. The predictions based on the Adaptive Onset Hypothesis were not borne out by the data, indeed, in the case of social status, the association found was in the opposite direction to the prediction.

The association found between timing of menopause and acculturation was the only significant independent relationship which was found as predicted. The hypothesis was based on the idea that changes that come with acculturation may result in a shift in the timing of menopause, causing it to move from the average age at menopause for women in Pakistan

(estimated by various studies to be somewhere between 44 and 49 years) (Adhi et al. 2007; Yahya and Rehan 2002; Baig and Karim 2006; Wasti et al. 1993) to the typical age of menopause among white British women (estimated at 50-52 years) (McKinlay, Jeffreys, and Thompson 1972; NHS 2008).

It is interesting to note that a significant relationship was found between timing of menopause and the broad measure of acculturation (SL-ASIA Score in three categories) rather than the SL-ASIA Behavioural Competencies Score or the SL-ASIA values score. The SL-ASIA Total Score is a measure of acculturation in the sense that is most often meant by the word: changes which make one more similar to a host population. This contrasts with what is reflected in the other two SL-ASIA variables: change in values reflected by the SL-ASIA Values Score or ability to fit in with different groups reflected in the SL-ASIA Behavioural Competencies Score. These three measures were not approximations of the same underlying construct and were not always related to one another. Some women who said they felt very comfortable around white British people or who said they believe in British values as well as Asian values were often quite ‘unacculturated’ in other ways, for example married in an arranged marriage with several children, only eating Asian food, listening to Asian music, only wearing traditional clothing like *shalwaar kameez*, sometimes with little or no formally education, and working in childcare or not working (both considered more traditionally acceptable). Thus, the behavioural and the more psychological aspects of acculturation do not necessarily coincide among women in this population.

It is also interesting that timing of menopause was associated with acculturation and not timing of migration since the two are associated with one another in this sample (SL-ASIA and Timing of Migration: Pearson  $\chi^2=22.482$ ,  $p<0.001$ ). Previous research found differences based on whether childhood was spent in the UK or in Bangladesh in some aspects of reproductive function in Bangladeshi women (progesterone) but not others (estradiol) (Núñez-de la Mora et al. 2007; Núñez-de la Mora et al. 2008). The present study had a small sample size for early migrants or those born in the UK ( $n=6$ ) since the number of women of Pakistani origin actually born in the UK in the 1940-1960s was relatively small and most Pakistani women in the study age group migrated to the UK at marriage. Future studies (in ten years time and onward) will find it easier to recruit larger numbers of postmenopausal women who spent pre-pubescent life in the UK to further explore whether timing of menopause is influenced by these differences in developmental conditions.

*Biradari* was found to be associated with timing of menopause though the relationship was the opposite of that predicted. *Biradari*, but not place of birth, was associated with menopausal age group, though most of the women whose *biradari* was *Choudhary Jatt* are from Mirpur District in *Azad* Kashmir. During interviews, people talked about *biradari* as a support system, but sometimes also considered it a drain. While one's relationship to one's *biradari* in general may be something of a double-edged sword, in terms of providing, as well as requiring, financial and social resources, the advantages afforded by *biradari* membership may depend largely on the local circumstances of one's specific *biradari*. During the fieldwork I found that the *Choudhary Jatts'* effectiveness in achieving chain migration and migration through transnational arranged marriage has made them a large group in Bradford, particularly in Keighley, and that they were known for sticking together and having a certain amount of power in the local area. Indeed, Ballard (2001) considered arranging transnational consanguineous marriages an important way of increasing the power and status of one's *biradari*. During the fieldwork I also found that there was also strong perception among British Pakistanis in Bradford that the Mirpuri *Choudhary Jatts*, as well as other Mirpuris, are less acculturated than the rest of the British Pakistani population. This was sometimes expressed by saying that the Mirpuris were not 'westernized' and had not changed at all since migration in the 1960s, sometimes describing them this way while also using the term 'backward'. This suggested lack of acculturation was borne out in the sample (SL-ASIA Total Score and *Choudhary Jatt biradari*: Pearson  $\chi^2=15.714$ ,  $p<0.001$ , SL-ASIA Total Score and Mirpur as Birth Place: Pearson  $\chi^2=12.742$ ,  $p=0.002$ ). However, the relationships between timing of menopause and acculturation score and timing of menopause and *biradari* were independent and in opposite directions; thus, despite being less acculturated on the whole, women from the *Choudhary Jatt biradari* were older at menopause than non-*Choudhary Jatt* women.

It is possible that social support from the *biradari* may have a protective effect against early menopause. This fits with research indicating that measures of distress are associated with earlier menopause in women from minority ethnic groups (Bromberger et al. 1997) and suggestions that socially supportive customs may delay menopause (Bener et al. 1998). It further fits with Dressler's (1995, 2004) suggestion that having specific culturally meaningful social resources will be likely to influence physiology. Specifically, membership in this *biradari* in this location may constitute one of what Dressler refers to as a "salient set of social relationships that would supply this sense of social support" (1995:41). This

suggestion is also supported by the results of an ethnographic study of menopause among women in a Welsh village (Skultans 1988). Skultans (1988) found that women's menopause experiences and perceptions were strongly influenced by the extent to which their most salient social relationship (that with their husband) was 'happy' by local standards. The finding in the present study regarding *biradari* also unexpectedly fits Kuhle's (2007) prediction that early menopause will be associated with the absence of kin who could help raise future offspring since a less well-represented *biradari* (in local terms) would mean fewer such helpers.

Most of the indicators of socio-economic status (education, employment history, own social class, and husband's social class) were not found to be significant predictors of timing of menopause (with one exception: ladder status). This finding fits with those of a number of studies (Reynolds and Obermeyer 2003; Parazzini, Negri, La Vecchia 1992; Palmer et al. 2003; Reynolds and Obermeyer 2001; Garrido-Latorre et al. 1996; Aydin et al. 2005; Nagel et al. 2005; Qazi 2006; Wasti et al. 1993; Hardy, Kuh, and Wadsworth 2000) but differs from those of other studies (Garrido-Latorre et al. 1996; Ayatollahi, Ghaem, and Ayatollahi 2005; Do et al. 1998, Lawlor, Ebrahim, and Smith 2003, Hardy and Kuh 2005; Ortiz et al. 2006; Cagnacci et al. 2005; Sievert and Hautaniemi 2003; Brett and Cooper 2003; Özdemir and Çöl 2004; Johnston 2001; Reynolds and Obermeyer 2005; Luoto, Kaprio and Uutela 1994). Both groups of studies used a range of different indicators of social class, or socio-economic status. But as argued in Chapter One, it is possible that use of differently measured constructs in such varied locations (Iran, Morocco, the UK, the Netherlands, Pakistan, Mexico, the US, Australia, Puerto Rico, Lebanon, Turkey, and Italy) all under the heading of socio-economic status may be disguising distinctly different influences on reproductive ageing operating via different pathways or mechanisms.

The results of the two studies which were carried out in Pakistan which used measures of socio-economic status (Wasti et al. 1993; Qazi 2006) are in some ways similar to the findings of the current study. Wasti and colleagues' study was of 250 poor slum dwellers, 250 middle class women who were accompanying hospital clinic attendees, and 150 wives of retired military officers. Women in all three groups were reported to be postmenopausal and living in Karachi. Wasti and colleagues (1993) found no significant differences between the mean recalled menopausal ages of these three groups (which represent different socio-economic groups) using paired z-tests (first group vs. second group, first group vs. third group, and second group vs. third group). The second study was a cross-sectional study of 800 naturally

postmenopausal women aged 45-59 years living in Sindh, Pakistan (Qazi 2006). Qazi (2006) found that age at menopause was not significantly associated with socio-economic status based on monthly household income. In the present study, the results for the most similar socio-economic measures (occupational social class of self and husband) were the same as these Pakistani studies: no significant association with timing of menopause.

Indeed, the measure found here to be associated with menopausal age group was the perceived social status measure (which was not significantly associated with education level, social class or husband's social class in this sample) which women may or may not have considered related to their economic status at all.

The statistically significant relationship found between timing of menopause and social status was in the opposite direction to the one hypothesised (high social status was found to be associated with earlier menopause rather than later menopause) and contrasts with the majority of studies finding a relationship. Most of the studies which found a relationship (whether independent or not) between a measure of social, socio-economic, or education status and timing of menopause have that found menopausal age increases with increased status (Garrido-Latorre et al. 1996; van Noord et al. 1997; Do et al.1998; Ayatollahi, Ghaem, and Ayatollahi 2005; Lawlor, Ebrahim and Smith 2003; Hardy and Kuh 2005; Ortiz et al. 2006; Cagnacci et al. 2005; Sievert and Hautaniemi 2003; Shinberg et al. 1998; Brett and Cooper 2003; Özdemir and Çöl 2004; Luoto, Kaprio and Uutela 1994). However, the present study found that menopause was earlier among women who rated themselves as higher status.

This finding indicates that British Pakistani women who have characteristics which make them consider themselves to be high status may be more vulnerable to faster reproductive ageing. This finding is similar to those of Dressler (1991), Gravlee, Dressler and Bernard (2005), and Sweet and colleagues (2007) who found that in the US and Puerto Rico people with characteristics which marked them out for racist discrimination in the multi-racial or multi-ethnic societies in which they live, who also report that they have locally salient markers of high status, were particularly vulnerable to poor health outcomes. Dressler (1995) explained these findings as resulting from stress caused by the denial of claims to higher social status, despite achievement, due to discrimination. Bolognani (2007a:365) reported that a 'glass ceiling' in careers was widely perceived in her ethnographic study of British Pakistanis in Bradford, and found that "frustration in attempting to achieve economic and social goals" was also related to perceptions of racism and Islamophobia. During the

ethnographic fieldwork for the present study, many women talked about their experiences of discrimination in public and in their workplaces. One woman told me how deeply frustrated she felt about the discrimination she saw as having severely hampered her career. This had contributed to her disillusionment with British society, partly because she had taken seriously, on arriving in the UK as a child, the idea that there were equal opportunities for advancement for all. She said, “[I] thought the world would be my oyster, not that the teachers would say ‘you can’t do this’ and ‘you can’t do the other’ and ‘you’re not expected to do this or the other’ and would have stupid ideas about where you come from.” Speaking of some of her experiences of discrimination she said, “they have racist ideas about what Asian women are supposed to be like...I had a head of section who was really racist and really undermined me all the time.”

The experience of discrimination contributed to a sense, for many women interviewed in the present study who reported that they were high on the ladder of social status within their communities, that they were likely unable to achieve the benefits they would expect of such a status because they are living in the UK. This is also contributed to by the fact that the lives they would have led as high status people in Pakistan are not possible in the UK. The women I interviewed generally believed that a high status woman in Pakistan would not need to cook or clean and might not need to be economically productive at all. Indeed, when many British Pakistanis return to Pakistan, they often live in their own large palatial houses (built with remittances) and stay for long periods of time without working or doing household chores. One woman who rated herself high on the ladder found the difference between Pakistani and British life particularly frustrating despite having lived in the UK most of her life. She told me repeatedly that she wanted to move back to Pakistan because she felt she should not have to spend her whole life working so hard both at her job and then at home. In an interview, she said, “you know when I get tired of the lifestyle here, because it’s like, it’s really tiring and hardworking and you think, ‘Oh, God, I wish I were going back to Pakistan’ ”.

In addition, women who view themselves as high status may have less access to social resources from other British Pakistani women because these culturally salient markers of higher social status are recognised by other British Pakistanis. This is because, as Werbner points out, “Pakistanis’ concern with hierarchy continues to be all pervasive” (1990: 120), and, she argues, high status can be a barrier to friendship with lower status women (as mentioned in Chapter Two). Several times during the fieldwork, I encountered women talking about the need to socialise with people similar in status. One woman articulated it as

“[we] can’t mix up too easily, we find our standards people.” Thus, realization of the material aspects of the lifestyle that Pakistanis associate with high status is constrained and access to social support may also be constrained for higher status women. This could make them more vulnerable to an advanced pace of reproductive ageing.

The findings of this study regarding body size in childhood and adolescence, as well as ratio of sitting height to standing height, differ from the findings of a number of other studies which have found timing of menopause to be associated with indicators of childhood nutrition (Sievert and Hautaniemi 2003; Elias et al. 2003) and growth (Hardy and Kuh 2002a; Cresswell et al. 1997; Lawlor, Ebrahim, and Smith 2003). Though other studies have found that recalled childhood and adolescent body sizes reported in midlife are accurate (Casey et al. 1991; Must et al. 2002), during the fieldwork it seemed apparent that women somewhat romanticised their previous body sizes and many were now unhappy with their obesity. This may have led women to underreport their previous body sizes and, indeed, for both childhood and adolescence the category ‘smaller than same age peers’ has the highest frequency. As for the ratio of sitting height to standing height, while numerous studies have used this measure as an indicator of prepubertal growth (Velásquez-Meléndez et al. 2005; Malina et al. 2004; Bogin et al. 2002; Swanson et al. 1996), it has recently been suggested that this measure is biased in participants with high body fat because of the effects of greater gluteo-femoral fat thickness on sitting height measurement (Bogin and Varela-Silva 2008). If Bogin and Varela-Silva are correct, the fact that most women in this study had high body fat means this measure is likely to have been biased.

Mother’s age at the time of the participant’s birth also did not have the predicted inverse relationship with timing of menopause. A relationship was hypothesized based on previous research which showed older maternal age to be related to reduced fecundity in female offspring (Smits et al. 1999; Smits et al. 2002) as well as other reproductive disorders in female offspring (Smits et al. 1997). It is possible that there was not enough variation in maternal age to show a relationship to timing of menopause, particularly since there were not many participants who reported advanced maternal ages. This may have been a result of either error in reporting or the tendency toward early childbearing in older generations of Pakistani women. Two techniques were used to try to increase the validity of reported maternal age. The first technique involved asking the participant whether she knew her mother’s age at any point, including her current age or her age at death. These answers were used to calculate the mother’s age in the participant’s year of birth. The second technique for



increasing the validity of maternal age at participant's birth was grouping reported maternal ages. This second technique made it possible to include information from several more participants (since some reported an age range such as 13-14 years old), though overall reporting was low (n=49), and reduced the effect of small errors in reporting. However, these techniques may not have been adequate in a population in which awareness of exact ages is, and has typically been, low.

The prediction that timing of menarche would be negatively associated with timing of menopause was not supported by the data, possibly for similar reasons. The result accords with many studies (Parazzini, Negri, and La Vecchia 1992; Palmer et al. 2003; Sievert and Hautaniemi 2003; Reynolds and Obermeyer 2001; Reynolds and Obermeyer 2005; Garrido-Latorre et al. 1996; Aydin et al. 2005; Nagel et al. 2005; Lawlor, Ebrahim, and Smith 2003; van Noord et al. 1997) but differs from others carried out in a variety of different populations (Elias et al. 2003; Cagnacci et al. 2005; Varea et al. 2000; Nagata et al. 2000; Do et al. 1998; Reynolds and Obermeyer 2003). Despite attempts to increase the validity of menarcheal age data by using an ordinal version of this variable (following the method suggested in Cooper et al. 2006), reporting of menarcheal age in this study may also have been subject to error since, as with maternal age, some women may not have been aware of their age at the time when they experienced menarche and thus could not accurately estimate it.

The lack of a significant association between consanguineous marriage and the timing of menopause differs from that of the two other studies that examined this factor in relation to age at menopause which found that consanguineous marriage was associated with later menopause (Ayatollahi, Ghaem, and Ayatollahi 2005; Bener et al. 1998). Both of these studies, however, used t-tests to compare the mean ages at menopause of the two groups (women in consanguineous marriages and women in non-consanguineous marriages) rather than using the variable in multivariable regression models to control for confounders or assess the relative strength of consanguinity as a predictor compared to other predictors of timing of menopause. Additionally, Bener and colleagues (1998) attributed their finding to social support within consanguineous marriages. This may be a key to why this study does not find the same result: consanguineous marriage means different things in different groups.

During the ethnographic fieldwork, I found that there was a sense that consanguineous marriage produced very mixed results (in terms of the success of the union) despite being very common. In practice, consanguineous marriage did not guarantee social support for

wives in these marriages despite the fact that elders often chose consanguineous marriages for their daughters, in part, because they thought it would be more likely to provide a loving and supportive environment for that daughter (in addition to the socio-economic reasons mentioned in Chapter Two). There were particular problems recognized for families that choose to follow a custom in which a pair of siblings from one natal family are married to their first cousins who are siblings, particularly where the families exchange daughters (since there is typically patrilocal<sup>13</sup> or virilocal<sup>14</sup> residence). While elders generally expect this situation to result in an even safer and more supportive environment for the brides, women cited numerous examples they had seen in which problems in one marriage destabilized the other marriage, sometimes resulting in abuse against the sister of a husband who was deemed to have acted inappropriately. Thus, in the case of the present study, consanguineous marriage is less likely to be a consistent marker of social support within the marriage, or any post-marital circumstances, than it is to indicate something about the background (and natal family) of the woman.

In this study tobacco use was not found to be associated with timing of menopause. As suspected in some other studies finding no association (Garrido-Latorre et al. 1996; Reynolds and Obermeyer 2005), this may be attributable to the low frequency of use of tobacco among British Pakistani women. The present study also tested the hypothesis that women who are exposed to tobacco smoke in the home may have an earlier menopause, but found no supporting evidence. It may be that passive exposure is not comparable to being a smoker in terms of its effects on reproductive ageing. It is also possible that because of the relatively high level of gender segregation in this population, in line with *parda* (described in Chapter Two), coupled with the fact that, for men, smoking is much more socially acceptable than it is for women, women are not exposed to tobacco smoke within their homes to a degree that would affect the pace of reproductive senescence.

Few studies have looked at the length of the interval from marriage to first birth in relation to timing of menopause. The results of this study differ from those of a large Dutch cohort study that found a small independent relationship between age at menopause and the length of the interval from marriage to first birth (van Noord et al. 1997). Van Noord and colleagues (1997) found this relationship both in the sample as a whole and in a subsample of

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<sup>13</sup>A term meaning that a man resides in his father's house into adulthood and brings his wife to live in his father's house after marriage.

<sup>14</sup>A term meaning that a husband brings his wife to live in his own house after marriage.

study participants who had not used oral contraceptives. The relationship was also found to be independent of age at first childbirth and parity (as well as 11 other possible confounders). In the present study, women were not asked whether they had used any form of contraception between marriage and first childbirth. However, there is an acknowledged pressure not to delay first childbirth among British Pakistanis which has been noted by other anthropologists (Shaw 2000b). Alternatively, a larger sample size in the present study could have allowed for an adequately-powered analysis of the effect of the length of time from marriage to first birth on the timing of menopause on a sub-sample of women who had never used any form of birth control.

The results of this study regarding timing of menopause, pregnancies, and parity fit into the pattern of inconsistent results in the literature. Approximately equal numbers of studies have found that pregnancy or childbearing delay menopause (Elias et al. 2003; Ortiz et al. 2006; Parazzini, Negri, and La Vecchia 1992; Garrido-Latorre et al. 1996; Do et al. 1998; Nagel et al. 2005; Lawlor, Ebrahim, and Smith 2003; Whelan et al. 1990; Ashrafi et al. 2008; Ayatollahi, Ghaem, and Ayatollahi 2003) as have found no significant association (Reynolds and Obermeyer 2003; Cagnacci et al. 2005; Palmer et al. 2003; Varea et al. 2000; Sievert and Hautaniemi 2003; Reynolds and Obermeyer 2001; Shinberg 1998; Johnston 2001; Aydin et al. 2005; Özdemir and Çöl 2004; Qazi et al. 2006). Some studies have found no significant association between parity and menopause independent of confounders (van Noord et al. 1997; Bromberger et al. 1997). Very few women in this sample were nulliparous (n=5) or never pregnant (n=5). The studies which have found a relationship between parity and menopausal age have generally shown a significant difference between nulliparous or never pregnant women and women who have been pregnant or had children (Do et al. 1998; Whelan et al. 1990; Lawlor, Ebrahim, and Smith 2003; Reynolds and Obermeyer 2005). Some have found a significant difference between the menopausal ages of women who were nulliparous or never pregnant and those who have had a small number of children or pregnancies (Ortiz et al. 2006; Nagel et al. 2005). However, two studies have found significant trends for increasing menopausal age with both increasing number of pregnancies and increasing number of children (Ayatollahi, Ghaem, and Ayatollahi 2003; Garrido-Latorre et al. 1996). As argued in Chapter One, a role for understanding the broader context in which reproductive decision making takes place is indicated.

The lack of a significant association between breastfeeding experience and timing of menopause found in this study accords with several other studies (Johnston 2001; Aydin et al.

2005; Özdemir and Çöl 2004) though few have investigated this as a potential influence on menopause. One large prospective German study (n=4807) found that a short period of breastfeeding (1-5 months) delayed menopause (HR: 0.81; 95% CI: 0.69–0.94) compared to no breastfeeding (Nagel et al.2005). In the present study only 16 women (16.8%) had not breastfed at all and few had breastfed for less than a year (n=39). This differs from the aforementioned German study in which 34.4% (n=1655) of the sample had not breastfed and 31% (n=1491) had breastfed for 1-5 months. The present study did not look at the period of exclusive breastfeeding or, what would be potentially more useful, the length of the period of lactational amenorrhea. These would be best suited to research within a prospective study design and were, therefore, not ideal for the present study.

A cross-sectional Mexican study found a positive relationship between the timing of menopause and the number of children breastfed (n=472) (Garrido-Latorre et al.1996). The authors report that, as the number of children breastfed increased (by categories 1-2, 3-4,  $\geq 5$ ), menopause was delayed slightly but significantly. This study also found that ever having lactated was associated with a 2.1 year delay in menopause on average ( $p<0.05$ ) (Garrido-Latorre et al. 1996). Paradoxically, the highest age at menopause was found in the group of women who had “children without lactation” (47.9 years;  $p<0.05$ ), however, this group was very small (n=16). The present study also tried using the same categories (of number of children breastfed) as were used in Garrido-Latorre and colleagues’ study to see if these categories reflected some kind of threshold but results were still non-significant ( $p=0.404$ , results not shown). Considering that the Garrido-Latorre and colleagues’ (1996) study found paradoxical results and that a US study by Dvornyk et al. (2006) found that ever having breastfed was associated with earlier menopause ( $p=0.025$ ;  $SE=0.4$ ;  $n=248$ ) independent of confounders (oral contraceptive use, alcohol use, smoking, and parity), any assumption that previously assessed relationships are due to the ovulatory effects of breastfeeding may not be well founded.

Use of variables representing the period of exclusive breastfeeding or the duration of lactational amenorrhea could illuminate whether the previous findings are related to conservation of follicles through lactational amenorrhea, whether other possibly hormonal factors are at work, or whether the determinants of breastfeeding behaviour are the underlying drivers of the relationship. Women in the present study often explained during interviews that their decisions about the appropriate period of breastfeeding were based on Islamic teachings which suggest that each child should be breastfed for 2 years. This may

explain why women who breastfed at all tended to continue for longer than women in the German study cited earlier. Indeed two of the three other studies which found no significant association between breastfeeding and timing of menopause (Aydin et al. 2005; Özdemir and Çöl 2004) were also from Muslim majority populations so perhaps religious or other beliefs about breastfeeding should be considered as influential factors.

The lack of a significant association between timing of menopause and oral contraceptive use in the present study concurs with the findings of several other studies (Sievert and Hautaniemi 2003; Reynolds and Obermeyer 2001; Reynolds and Obermeyer 2005; Özdemir and Çöl 2004), including some prospective studies (Bromberger et al. 1997; Nagel et al. 2005) and some large studies (Ortiz et al. 2006; Lawlor, Ebrahim and Smith 2003). However, others have found a relationship between oral contraceptive use and either later menopause (Garrido-Latorre et al. 1996; Johnston 2001; van Noord et al. 1997) or earlier menopause (Aydin et al. 2005; Ayatollahi, Ghaem, and Ayatollahi 2003; de Vries et al. 2001).

The largest study which has considered oral contraceptive use in relation to age at menopause, a study of 17,070 African-American women, found that menopause was delayed in women who used oral contraceptives compared with those who had never used oral contraceptives (Palmer et al. 2003). In their study, use of oral contraceptives for at least one year was associated with less likelihood of having reached menopause (HR = 0.86; 95% CI: 0.77, 0.96). Palmer et al. (2003) found that when the variable 'period of oral contraceptive use' was broken into categories (1-4 years, 5-9 years,  $\geq 10$  years) and compared to no oral contraceptive use, the relationship lost statistical significance. However, after confounders were controlled for, these categories of length of contraceptive use were significantly associated with likelihood of reaching menopause, although this likelihood did not continue to drop as years of use increased (Palmer et al. 2003).

In the present study, only 10.5% of women used oral contraceptives for more than a year and over 70% had not used oral contraceptives at all. These low numbers may be responsible for the lack of a significant relationship between timing of menopause and oral contraceptive use since use for over one year may be the necessary minimum exposure for influencing menopausal age. However, a study in Iran, which did find that oral contraceptive use was associated with a reduction in menopausal age, showed a similar pattern of low use (only 4.4% of the sample had used oral contraceptives and only 0.8% had used them for more than a year).

De Vries and colleagues (2001) noted that some women use oral contraceptives in order to combat menopausal symptoms (in place of hormone replacement therapy). They have suggested that this practice can make assessing the time of the last menstrual period difficult since the hormones in oral contraceptives can cause non-ovulatory bleeding. De Vries et al. (2001) suggest, therefore, that studies looking for an association between oral contraceptive use and age at menopause should exclude women who have used oral contraceptives in this way, though they note that few studies have done this. De Vries et al. have also suggested that the effect of higher dose oral contraceptives on timing of menopause may be larger than that of lower dose oral contraceptives. In this study it was not possible to distinguish between different oral contraceptives based on dosage, which may mean an effect was not detectable, though no women reported use of oral contraceptives for menopausal symptoms.

It is also possible that the associations found between oral contraceptive use and timing of menopause have different underlying causes in different social contexts. Use of oral contraceptives is, in some places, prohibitively expensive for poorer women, and may also be out of line with religious or traditional values. Thus, their use may be an indicator of economic status and/or progressive attitudes. In fact, the studies which found a statistically significant relationship between menopausal age and oral contraceptive use were of African-American women (Palmer et al. 2003), women in Mexico City (Garrido-Latorre et al. 1996), Blackfoot Native American women living on a reservation (Johnston 2001), Turkish women (Aydin et al. 2005), and Iranian women (Ayatollahi, Ghaem, and Ayatollahi 2003). In all five cases, the study participants would have spent their reproductive lives in places in which use of oral contraceptives incurred a significant cost or would have been considered out of line with pro-natal or anti-contraception norms at the time.

### **Conclusion**

Only one of my hypotheses about timing of menopause was supported; less acculturated women were found to experience an earlier menopause. This hypothesis was made based on my own reasoning rather than previous findings of an association between acculturation and timing of menopause. Neither early life factors nor reproductive factors were found to be independently related to timing of menopause. The Adaptive Onset Hypothesis was partly supported by the data but only after ethnographic data revealed that *biradari* might be related to kin support for offspring. The prediction that markers of high social status and low parity

would predict later menopause and that these relationships would be the strongest independent relationships because these should be evolutionarily programmed responses was not correct. Information about social context helps to explain why the prediction was incorrect.

## CHAPTER FIVE– EXPERIENCE OF THE MENOPAUSAL TRANSITION

Previous studies have shown differences in reported symptom<sup>15</sup> experience at menopause between ethnic groups/populations (Obermeyer, Reher, and Saliba 2007; Anderson and Yoshizawa 2007; Gold et al. 2006; Avis et al. 1993). Studies have also found that beliefs and ideas about menopause and its related symptoms vary considerably cross-culturally (Gupta, Sturdee, and Hunter 2006; Lock 1993; Beyene 1989; Davis 1982). This chapter attempts (1) to overview some potentially problematic issues with much of the research on menopause symptomatology by reviewing this literature briefly, (2) to suggest possible alternative approaches, and (3) to investigate the potential usefulness of new types of data to the study of variation in experience of menopause using data collected from women of Pakistani origin.

Several different approaches have been previously used in research to try to assess the prevalence of menopausal symptoms among different groups/populations. Some studies have produced their own checklists of symptoms (Avis et al. 2001; Obermeyer, Ghorayeb, and Reynolds 1999; Sukwatana et al. 1991), while others have used standard instruments such as the Kupperman or Blatt-Kupperman Index (Nedstrand et al. 1998; Blatt, Weisbader and Kupperman 1953), the Menopause Symptom checklist (Karaçam and Şeker 2007; Neugarten and Kraines 1965) the Greene Climacteric Scale (Barentsen et al. 2001; Sierra, Hidalgo, and Chedraui 2005), the Menopause-Specific Quality of Life (MENQOL) questionnaire (Hafiz, Liu, and Eden 2007; Hilditch et al. 1996), and the Everyday Complaints Symptom List (Sievert and Espinosa-Hernandez 2003; Dennerstein et al. 2000; Wilbur et al. 1998). Each of these lists includes a different number of symptoms, however, there is some overlap between them, notably, all include vasomotor symptoms and depression (or metaphors/indicators for depression such as ‘feeling blue’, ‘crying’) and most include an indication of the severity of symptom experience. Several of the lists are based either entirely or mainly on symptoms determined to be associated with menopause based on clinical experience of, and interviews with, women living in New York or Chicago in the mid 20<sup>th</sup> century (Blatt, Weisbader and Kupperman 1953; Neugarten and Kraines 1965), including the Kupperman Index, the Menopause Symptom Checklist, Greene Climacteric Index, and the MENQOL questionnaire.

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<sup>15</sup> I have used the term symptom in this chapter and others despite the noted association of the term with the tendency to pathologise menopause (Lock 1993) because it is the term used most often in the menopause literature. I use the term to mean changes (physical, psychological, or otherwise) whether transient or permanent, that are a result of menopause or the menopausal transition and use it interchangeably with phrases like ‘changes due to menopause’.



In contrast, the Everyday Complaints Symptom List developed by Kaufert and Syrotuik in 1981 is a combination of experiences which the authors consider to be unrelated to menopause and those which they consider to be potential symptoms of menopause (based on review of clinical literature by the International Health Foundation in 1977). The authors developed the Everyday Complaints symptom list in this way to try to prevent what they consider to be cultural stereotypes of menopause from interfering in the research and the administration of the checklist avoids mentioning menopause while enquiring about recent experience of each of the symptoms. Kaufert and Syrotiuk (1981) suggested that letting research participants know that the research is about menopause will create bias in reporting due to local ideas about menopause. Others using the Everyday Complaints checklist have also justified its usage on the grounds that it avoids limiting researchers to symptoms associated with the western biomedical model of menopause (Sievert 2006); however, the addition of several items without any known connection to menopause to a western biomedically derived checklist is perhaps not the most effective and meaningful way to expand the set of symptoms under consideration for an association with menopause. Other researchers have tried to combine these closed question quantitative approaches with more open-ended and qualitative methods of assessing prevalence of menopausal symptoms in order to discover meanings and understandings of menopause in different societies (Lock 1993; Beyene 1989; Davis 1982).

While quantitative approaches in general have obvious advantages, including facilitating statistical inference, the use of symptom checklists has several limitations. To begin with, most of these tools, particularly the Everyday Complaints symptom list, attempt to bypass women's understandings about their experiences at mid-life. In appraising this approach, two questions should be addressed: first, what problems might come along with bypassing women's understandings about their experiences and only asking about symptoms already on symptom checklists; second, to what extent might the ideas women have about menopause restrict their self-reporting of menopause symptoms if their understandings are not bypassed.

### **Limitations of Bypassing Women's Knowledge about Their Experiences**

In interpreting the results of menopause checklists, researchers seek to determine which experiences might be due to menopause without reference to information from the participants other than whether they have had the experiences (usually recently). It is

possible that the symptoms under consideration for a relationship with menopause may be understood by the individual participant to be related to something other than menopause. The currently prevailing approach seeks to keep this type of information out of the study data. This is presumably because women may be wrong in assigning experiences to other causes or because women may not realize that menopause is the cause of symptoms they are experiencing. However, it is plausible that women may be correct in their attribution of cause of their experiences for two reasons: one, women may be aware that the frequency of experience of a symptom has not changed in mid-age or since their menstrual cycles began to change (for example, a woman who has experienced sleep problems since she was in her teens or twenties which have not worsened or have somewhat improved at menopause could be incorrectly interpreted as suffering from menopausal insomnia using a two week recall checklist); two, women may be aware that their experience of a symptom is more likely to be related to another condition or circumstance (for example, sweating at night in the previous two weeks may have been due to a viral or bacterial infection or reported tiredness may be due to iron-deficiency anemia or recent shift-work). Furthermore, these errors may be systematic and related to differences between populations or ethnic groups, especially those which relate to health conditions (since these often vary by population including rates of infection) or social circumstances (such as nature of employment, if any, which varies by population, gender, and often ethnicity).

Bypassing women's knowledge about their experience also allows causes to be conflated by the researcher and, in some cases, for the researcher to assume that changing levels of any non-vasomotor symptom experience in the menopause transition to be a result of other transient morbidity (Mitchell and Woods 1996).

### **Limitations of Asking Only About the Symptoms on Checklists**

Use of symptom checklists reinforces what has become to some extent a closed system of investigation of menopause symptoms. Despite a clear lack of agreement between researchers about which symptoms should be on menopause symptom checklists, a lack of openness appears to keep research focused on a list of potential symptoms that is most close to the list of symptoms that European and North American participants and researchers originally identified, which was in turn influenced by a pre-existing, non-scientific body of beliefs. While it makes sense that the ideas western researchers have been most familiar with

are those which they have had most opportunity work with, the extent to which debate and investigation has focused on a small number of symptoms is surprising, as is how little (qualitatively and quantitatively) the experiences and understandings of non-westerners have been included in the scientific investigation. Vasomotor symptoms were identified as being a result of menopause as early as 1870 in western medical literature on menopause (Lock 1993). A large number of studies have attempted to develop a clear understanding of the relationship between vasomotor symptom experience and menopause status as well as vasomotor symptom experience and hormone levels including levels of estradiol [E2] (Randolph et al. 2005; Guthrie et al. 2005; Longcope, Crawford, and McKinlay 1996; Overlie et al. 2002), estrone [E1] (Longcope, Crawford, and McKinlay 1996), sex hormone binding globulin [SHBG] (Randolph et al. 2005), follicle stimulating hormone [FSH] (Randolph et al. 2005; Guthrie et al. 2005), luteinizing hormone [LH] (Overlie et al. 2002; Rannevik et al. 1995), dehydroepiandrosterone sulfate [DHEAS] (Randolph et al. 2005; Overlie et al. 2002), androstenedione (Overlie et al. 2002), testosterone (Randolph et al. 2005; Overlie et al. 2002), and free testosterone index (Randolph et al. 2005). Similarly depression, another of the symptoms which the medical menopause literature has suggested to be associated with menopause since as early as the 1890s (Sievert 2006; Lock 1993; Avis et al. 1993), has been carefully investigated in over 100 articles in the past 40 years (Nicol-Smith 1996) for a relationship with menopausal status, the timing of menopause, and levels of particular hormones, with some recent studies finding evidence to support such an association (Freeman et al. 2006; Cohen et al. 2006; Amore et al. 2007; Anderson et al. 2004; Maartens, Knottnerus, and Pop 2002; Punyahotra, Dennerstein, and Leher 1997; Boulet et al. 1994) and others finding no evidence of an association (Woods, Mariella, and Mitchell 2006; Avis et al. 1994; Kaufert, Gilbert and Tate 1992; McKinlay, McKinlay and Brambilla 1987). Few, if any, other potential symptoms have been so thoroughly investigated with the possible exception of vaginal dryness (Freeman et al. 2007; Avis et al. 2001; Dennerstein et al. 2000).

The lack of hypotheses or research about the biological plausibility of other symptoms should not be considered to be evidence of a lack of such plausibility. Since it has been suggested that population variation in symptom prevalence might be due to women from other populations or ethnic backgrounds ignoring or not noticing 'true' symptoms of menopause (Boulet et al. 1994; Crawford et al. 2007), we should also be open to the possibility that western women might be ignoring or conflating some true symptoms of menopause which other women may recognize. It is also worth noting that researchers generally do not

investigate the possibility of experience of 'true' symptoms that are not already on checklists among western women either.

A further sign of how closed much of the debate has become is evident in the fact that some researchers argue that a lack of response to hormone replacement therapy or the lack of a clear association with falling estrogen levels constitutes good evidence that these other experiences are not related to menopause (Dennerstein et al. 2002; Sievert 2006). In fact, the menopausal transition appears not to simply involve changes in estrogen levels, but rather appears to involve changes in circulating levels of several hormones including FSH (Randolph et al. 2003), LH (Santoro et al. 2004), inhibins A and B (Burger et al. 1999; Burger et al. 2007), SHBG (Burger et al. 2000), anti-Mullerian hormone (Burger et al. 2007) and DHEAS (Lasley et al. 2002) as well as the ratio of free to bound androgens (Burger et al. 2000). In addition, levels of several of the hormones which change at menopause have been found not to respond to hormone replacement therapy [HRT] (Castel-Branco et al. 1995), including FSH, which in some studies was found either to be little affected by HRT (Cooper and Thorp 1999) or to be unaffected in subgroups of a sample (Komulainen et al. 2000). This lack of change in FSH has been suggested to be a result of a lack of ovarian responsiveness to inhibins due to progressive dysregulation of the hypothalamic-pituitary-ovarian axis at menopause (Randolph et al. 2003; Santoro et al. 2003; Seifer et al. 1999; Welt et al. 1999; Klein et al. 1996b). Furthermore, changes in these other hormones could play a role in changes due to menopause, for example, inhibins have recently been discovered to play a role in regulation of bone mass and strength (Perrien et al. 2007), and decreases in inhibin levels across the menopause transition were associated with increasing bone turnover, regardless of changes in E2 or FSH (Perrien et al. 2006). Some researchers have concluded that since experience of vasomotor symptoms generally does not cluster in factor analysis with other experiences from symptom checklists that these other experiences are not a result of the same hormonal changes at menopause (Mitchell and Woods 1996). It is also possible that, even where lower estrogen levels alone may be the cause of a symptom, a dose-response relationship between hormone levels and symptom experience may not be present, and therefore HRT may not reverse these changes in the doses typically administered.

### **Does Culture Restrict Women's Self-reporting of Menopause Symptoms?**

While it is possible that women may only mention those changes that they have been taught to think are symptoms of menopause (when asked what changes they have experienced due to menopause), there is little evidence to support this suggestion and the extent to which it might be true has not been fully explored.

Relatively low self-report of changes due to menopause in response to open-ended questions about menopause experience has been reported in some studies (Longstaff 1984; Wright 1981). The lower levels of menopause symptom reporting using this method compared with responses to a checklist of recent experiences have been interpreted both as a positive sign about the checklist approach (Dennerstein 2002; Wright 1981) and more negatively, as over-reporting (Mackey 2004) and it has been suggested that this over-reporting is due to 'symptom suggestibility' (Thompson et al. 1973). Hence, it is far from unproblematic to assume that cases in which women report symptoms on a checklist that they have not previously reported in open self-report are due to the interference of menopause stereotypes with open self-report.

Furthermore, if the research aims to find out about biologically-based changes related to menopause that may have been overlooked then the potential for some self-censorship may not be of critical importance. This is because the menopause symptom beliefs of women from groups which have not been studied in this way are unlikely to completely overlap with the category of 'true' menopause symptoms in the biomedical model, as evidenced by the Japanese case (Lock 1993) and, as a result, this approach might help to produce more new hypotheses than would be produced using a standard checklist alone.

### **The Potential Contribution of New Data from Non-Western and Non-Clinical Sources**

Previous cross-cultural research on menopause symptomatology has generally sought to discover whether symptoms commonly associated with menopause in North America and Western Europe are experienced to the same degree by women from other parts of the world. This previous research has turned up interesting findings such as low to no reporting of hot flushes among some groups, the biological basis of which continues to be explored (Welty et al. 2007; Nagata et al. 2001; Martin et al. 1993). However, it has not included a corresponding exploration of the question of whether symptoms commonly associated with

menopause by women from other parts of the world are experienced by women in the West. Indeed, Lock (1993) imagined the idea of asking North American women about the symptoms associated with *konenki*, a life transition identified in Japanese culture which has a relationship with the end of menstruation, such as shoulder stiffness, but never did so, perhaps because she simply rejected the idea of a universal menopause symptom experience.

Women's own experiences of menopause may be a good starting point for research and, in fact, it was the experiences of women living in Chicago and New York in the 1950s and 1960s which appear to have been the starting point for a seemingly disproportionate amount of research since that time. An example of what can be gained from openness to a potential biological basis of symptoms experienced and described by non-western women in non-clinical situations is the work of Melissa Melby, who, following on from the work of Margaret Lock, has taken a step further in investigating the changes associated with *konenki*. She has examined the symptoms of *konenki* for an association with menopause using a quantitative approach and has argued for a biological basis to the experience of chilliness in relation to menopause suggesting that it constitutes a vasomotor symptom and that it is more common in Japanese menopausal women than hot flushes due to differences in thermoregulatory physiology and/or dietary intake of isoflavones (Melby 2007, 2005). In order to explore this potential relationship, she used an 82 item symptom checklist based on the same principles as the Everyday Complaints checklist but also including symptoms associated with *konenki*, 24 hour dietary records, and laboratory analysis of fingerprick blood spots for isoflavone concentration (Melby 2007).

This chapter seeks to explore three possibilities: first, that British Pakistani women will report experience of changes due to menopause other than those currently on symptom checklists and 'officially' considered to be likely symptoms of menopause; second, that they will attribute different symptoms to menopause on the checklist than the researchers who developed it; and third, that the symptoms they associate with menopause may be biologically related to menopause.

### **Descriptive Statistics**

Table 5.1 shows a description of the age, menopausal status, migration status, the number of symptoms experienced and the number attributed to menopause in the study sample.

**Table 5.1: Variables describing the sample**

Variable	n	Mean	SD	Range
Age (years)	253	49.53	5.49	39.33-61.17
Variable	n	Median	Interquartile Range	Range
# of symptoms experienced	257	2	0-3	0-8
# of items from checklist attributed to menopause	254	7	0-16	0-29
Variable	n	Category	n	%
Menopause Status	257	Premenopausal	102	39.7
		Perimenopausal	47	18.3
		Postmenopausal (natural)	84	32.7
		Postmenopausal (surgical)	18	7.0
		Status indeterminable	6	2.3
Timing of Migration	247	Born in the UK or migrated at or before menarche	31	12.6
		Migrated postmenarche	216	87.4

### **Experience of the Menopause Transition**

In open self-report, most of the women interviewed (67.3%, n=173) reported having experienced some kind of change due to menopause and two women (0.8%) did not know whether they had experienced any changes due to menopause. Frequencies of all 88 reported symptoms are presented in Table 5.2. There were a total of 498 reports of individual symptoms from the study participants. If symptoms are grouped into categories of similar symptoms, vasomotor symptoms (hot flushes, cold sweats, night sweats, and feeling cold) represent 27.1% (n=135) of the total reported symptom experience. Emotional or psychological changes due to menopause (including “feeling stressed and anxious”, “feeling angry and losing temper easily”, depression, crying, mood swings, “want to run away”, “feeling more emotional”, “cannot tolerate things”, claustrophobia, “doesn't want to talk”/“wants quiet”, “doesn't want to go out at night”, “feels like not normal because not menstruating”, fewer mood swings, “heart sink feeling”, loss of concentration, “obsessive

about work”, “thinking all the time”) represent 19.1% (n=95) of all reported symptom experience. Grouping all the descriptions of body pain together (backache, body aches, headache/migraine, abdominal pain, pain in legs, breast pain, arthritis/joint pain, “feet hurt underneath”, chest pain, neck pain, shoulder pain, knee pain) creates a group that represents 15.7% (n=78) of the symptom experience. The other set of symptoms emerging from a careful look at the changes women reported is physical illness-related symptoms (“health worsening”, high blood pressure, diabetes, heart problems, asthma, hernia, hypothyroidism, high cholesterol) which represent 2.8% (n=14) of the total reported symptom experience. However, many of the changes reported do not fit into any of these groups (e.g. tiredness, dizziness, weight gain, “trouble sleeping”, vision/eye problems, “fat stomach”/“swollen stomach”, “weakness”, feet or hands “burning”, urine problems/infection). Of the 11 symptoms originally considered to be likely symptoms of menopause by the International Health Foundation (1977), nine were reported in open-ended self report of changes at menopause by at least 10 women each.

**Table 5.2: Changes due to menopause by open self-report grouped by frequency**

<b>Reported changes experienced due to menopause</b>	<b>n</b>	<b>% of women reporting</b>
Hot flushes	104	40.5
Feeling stressed & anxious	32	12.5
Angry; lose temper*	25	9.7
Tiredness/laziness	22	8.2
Backache	20	7.8
Dizziness	19	7.4
Heavy periods; night sweats; weight gain	17	6.6
Trouble sleeping	14	5.4
Body aches; headache/migraine	12	4.7
Cold sweats; depression	10	3.9
Abdominal pain; crying	8	3.1
Vision/eye problems	7	2.7



Breast pain; arthritis & joint pain; fat stomach/swollen stomach; pain in legs; weakness	6	2.3
Feet or hands burning; uterine cramps	5	1.9
Feeling cold; hands numb; irregular periods; mood swings; urine problems/infection; want to run away	4	1.6
Health worsening; breasts heavy/swollen/bigger; circulation problems/pins and needles; feet hurt underneath; high blood pressure; memory problems; skin dryness; worrying	3	1.2
Chest pain; diabetes; heart problems; heart beating fast in throat; more emotional; out of breath	2	0.8
Asthma; balance problems; body swollen all over; body feels heavy; burning in chest; cannot tolerate things; claustrophobia; doesn't want to talk/wants quiet; doesn't want to go out at night; eating too much; fat in her blood; feeling like not normal because not menstruating; fewer mood swings; grey hair; hearing loss; high cholesterol; increased libido; feeling itchy; hair loss; heart sink feeling; hernia; hypothyroidism; knee pain; lack of libido; light periods; loss of appetite; loss of concentration; nausea; neck pain; numbness on one side of body; obsessive about work; periods changing; shaking hands; shoulder pain; sick at sight or touch of meat; skin darkening; slow heartbeat; snoring; thinking all the time; tooth problems; varicose veins; warm stomach; weight loss; wrinkles	1	0.4

\* Changes listed in the same box of the table separated by a semicolon have the same reporting frequency

### **Responses to the Symptom List**

Frequencies of responses to the 34 item symptom list are presented in Table 5.3. The two symptoms which were most frequently attributed to menopause were hot flushes (57.5%) and

night sweats (48.2%). The symptoms which were the next most frequently attributed to menopause are weight gain or loss (46.2%) and backaches (41.7%), both of which are included in the Everyday Complaints symptom list to disguise that the list measures menopause symptom experience. Two other symptoms which have been included for this reason were attributed to menopause by about a third of the participants: swelling of body parts (33.1%) and aches or stiff joints (31.5%). Generally the women specified that the type of ‘swelling’ that they were familiar with was increase in the size of the abdomen. Women also very commonly specified that they had heard of weight gain but not weight loss at menopause. The eight symptoms which were least attributed to menopause (vaginal discharge, dry eyes, loss of appetite, bladder infection problems, discomfort on passing urine, diarrhea-constipation, sore throat, and persistent cough) were also among the items on the Everyday Complaints list not expected to have any association with menopause.

**Table 5.3: Attribution of symptoms to menopause**

Symptom	n	Yes		Maybe <sup>1</sup>		No		I don't know	
		n	%	n	%	n	%	n	%
Hot flushes	254	146	57.5			30	11.8	78	30.4
Night sweats	253	122	48.2			43	17	88	34.8
Weight gain or loss (>3 kg)	253	117	46.2			44	17.4	92	36.4
Backaches	254	106	41.7			55	21.4	93	36.6
Lack of energy	254	105	41.3			53	20.9	96	37.4
Trouble sleeping	254	99	39			58	22.8	97	38.2
Cold sweats	254	98	38.6	1	0.4	62	24.4	93	36.6
Headaches-migraines	253	96	37.9			63	24.9	94	37.2
Nervous tension	254	96	37.8			66	26	92	36.2
Depression	253	90	35.4			71	28	91	35.4
Swelling of body parts	254	84	33.1			73	28.7	97	38.2
Shortness of breath on exertion	254	84	33.1			69	27.2	101	39.8
Dizzy spells	254	80	31.5	1	0.4	71	28	102	40.2

Aches or stiff joints	254	80	31.5			74	29.1	100	39.4
Memory loss	254	79	31.1			77	30.3	98	38.6
Tingling in hands or feet	254	72	28.3			85	33.5	97	38.2
Difficulty concentrating	254	71	28	1	0.4	79	31.1	103	40.6
Breast soreness/tenderness	254	68	26.8	1	0.4	81	31.9	104	40.9
Skin irritation (crawling or dryness)	254	66	26	1	0.4	84	33.1	103	40.6
Urine control problems	253	52	20.6			94	36.6	107	42.3
Shortness of breath at rest	254	51	20.1			102	40.2	101	39.8
Rapid heart beat	254	51	20.1	1	0.4	101	39.8	101	39.8
Vaginal dryness	253	46	18.2			97	38.3	110	43.5
Dry nose or mouth	254	46	18.1			97	38.2	108	42.5
Upset stomach	253	45	17.8			109	43.1	99	39.1
Chest pain on exertion	254	42	16.5			110	43.3	102	40.2
Vaginal discharge	253	42	16.6	1	0.4	100	39.5	110	43.5
Dry eyes	254	41	16.1	1	0.4	100	39.4	112	44.1
Loss of appetite	253	40	15.8	1	0.4	106	41.9	106	41.9
Bladder infection problems	254	37	14.6			109	42.9	108	42.5
Discomfort on passing urine	254	29	11.4			119	46.9	106	41.7
Diarrhea-constipation	252	22	8.7			126	0.5	104	41.3
Sore throat	254	21	8.3			130	51.2	103	40.6
Persistent cough	254	16	6.3			133	52.4	105	41.3

<sup>1</sup>Option not given

### **Factor Analysis**

Table 5.4 shows the factor loadings of all items on the symptom list. Of the 34 items, six did not load onto any of the five factors (chest pain on exertion, vaginal discharge, shortness of breath on exertion, diarrhea-constipation, aches or stiff joints, tingling in hands or feet). Factors were not easily described as psychological, vasomotor, etc. however; relationships

between some symptoms on the same factor could be identified. Factor one consisted of dizzy spells, lack of energy, hot flushes, night sweats, backaches, upset stomach, cold sweats, and trouble sleeping. The vasomotor symptoms could be understood by women to contribute to trouble with sleep and subsequent feelings of tiredness, backache, and dizziness. Factor two included several symptoms which could be related to emotional distress manifesting as anxiety or depression including headaches-migraines, loss of appetite, nervous tension, depression, difficulty concentrating, and rapid heartbeat. Most of the symptoms on factor three seemed to fall into two different categories; four of the symptoms related the idea that menopause can cause dryness in the body (vaginal dryness, dry eyes, dry nose or mouth, and skin irritation [crawling or dryness]), and two of the symptoms related to the idea that menopause changes body composition (weight gain or loss [ $>3$  kg] and swelling of body parts). Factors four and five were easiest to understand; women who believed that menopause could cause persistent cough also thought it could cause sore throat (factor four) and women who thought that menopause could cause bladder infection also thought it could cause discomfort when passing urine (factor five).

**Table 5.4: Loadings for five factors extracted with varimax rotation**

Symptom	Factor One	Factor Two	Factor Three	Factor Four	Factor Five
Dizzy spells	0.414				
Lack of energy	0.480				
Diarrhea-constipation					
Persistent cough				0.424	
Depression		0.614			
Backaches	0.537				
Upset stomach	0.401				
Headaches-migraines		0.561			
Cold sweats	0.569				
Aches or stiff joints					
Shortness of breath at rest		0.412			
Tingling in hands or feet					
Sore throat				0.541	
Trouble sleeping	0.467				

Chest pain on exertion					
Loss of appetite		0.453			
Swelling of body parts			0.402		
Difficulty concentrating		0.468			
Shortness of breath on exertion					
Nervous tension		0.678			
Urine control problems		0.468			
Bladder infection problems					0.662
Discomfort on passing urine					0.853
Rapid heart beat		0.522			
Hot flushes	0.688				
Night sweats	0.654				
Vaginal dryness			0.462		
Vaginal discharge					
Dry eyes			0.425		
Dry nose or mouth			0.553		
Weight gain or loss (>3 kg)			0.478		
Skin irritation (crawling or dryness)			0.401		
Breast soreness/tenderness			0.527		
Memory loss		0.437			

### **Relationship between Factor Scores and Other Variables**

Participant age was found to be positively correlated with factor score for factor four (persistent cough and sore throat) (Spearman's  $\rho=0.191$ ,  $p=0.003$ ,  $n=234$ ) but was not associated with any other factor score. Menopausal status had a near significant association with the factor score for factor four in Kruskal-Wallis analysis ( $p=0.051$ ) but no other factor. The trend was for women who were postmenopausal, whether surgically or naturally, to have a higher factor score for factor four than pre- or perimenopausal women. Migration status was found to be associated with factor scores for factors two and four in Mann-Whitney U tests. For factor two, women who were born or raised in the UK had a higher factor score than women who migrated to the UK after menarche (Mann Whitney  $U=1971.5$ ,  $p=0.002$ ). For factor four, the reverse was true, women who migrated to the UK after menarche had a higher factor score than women who were born in the UK or came in childhood (Mann

Whitney U= 2326.5,  $p=0.045$ ). However, later migrants did not differ significantly from early migrants or UK born women in the number of symptoms they experienced or in the number of symptoms on the checklist they attributed to menopause.

### **Ethnographic Data**

In the interviews, when asked if there were symptoms that they had heard of which were not on the list, women frequently reported that they had heard about women's abdomens getting bigger (*paet upar so jen*) after menopause and women becoming angry and losing their temper more easily (*bahot gussaa aataa*) at menopause. Women frequently talked about how abdominally fat they or other women were and felt abdominal obesity was unattractive. Thinness around the middle was highly desired (apparently more so than thin thighs, legs, or arms) and women made sure that if they had relatively a small mid-section that their clothes were tailored to show this to advantage.

Additionally, as the symptom list was being administered, several women mentioned that they were experiencing one or more of the symptoms on the list but for reasons not related to menopause, in many cases due to other long-term health problems. Several women who said they had never talked about menopause with anyone mentioned that they thought menopause might be making them feel very hot (*garmee lagnee*), indicating they had made a link between hot flushes and menopause on their own. When talking about their knowledge about menopause, women often mentioned that the timing of menopause varies woman to woman and sometimes when talking together about it argued with one another about how early an 'early menopause' would be.

Women also explained their knowledge of menopause symptoms in terms of how often they visited, and were visited by, other women. As mentioned in Chapter Three, giving and receiving hospitality in this way is a crucial part of British Pakistani women's social lives and learning about the symptoms of menopause appears to be closely bound up with this activity. Prasad has suggested that hospitality plays a very important role in Muslim South Asian folklore and argues that the importance of hospitality in South Asia has been overlooked by scholars: "Given its pervasiveness as a cultural imperative with socio-political implications, and its representation in normative literature, it is important that hospitality be viewed, not as arbitrary acts of social or religious largesse, but rather as a complex social system in its own

right intricately connected to other socio-cultural systems” (2003: 289). Among the women I spoke to it was clear that being visited, and therefore getting to provide hospitality, was more important than visiting others: women talked about being visited frequently and by many different people as a sign of status regardless of the status or importance of the guests. However, there was something of a cost to be paid for gaining the opportunity to act in this desired role. Women and their family members felt they must not be seen to violate important social norms if they wanted to maintain friendships in which women visit them. The guest/host situation was found to be a part of how norms are enforced, including those which relate to reproduction. Social prestige that was established via showing oneself to be a good host was also dependent on factors relating to women’s reproductive and sexual behaviour (as I will discuss in Chapter Seven). Additionally, as discussed in Chapters Two and Four, *biradari* membership and social status are important influences on access to such relationships as well. These differences in access to the friendships in which women spend time visiting one another appear to be part of what determines how much women learn about menopause symptoms. The source of knowledge, other than one’s own experiences, was chiefly the experiences of other middle-aged women and discussions about how and whether changes experienced are related to menopause. This has had a positive impact on how well-grounded their attribution of symptoms to menopause is. In this case, then, attribution of symptoms to menopause was not based on inaccurate stereotypes, as previous authors have suggested, but based on the experiences of women in the social networks of the research participants.

The interference of stereotypes was not a major barrier to reporting of menopause symptoms among Pakistani women for a further two reasons. First, women seemed to feel confident of their own experiences even where they had not heard or learned much or, in some cases, anything at all about menopause symptoms. Several women reported that their doctors did not agree with them that the changes they experienced were due to menopause, though these women felt sure they were. Second, women’s ideas about menopause symptoms appeared not to have very strict boundaries, which would be indicative of stereotyping, and, with the exception of depression, women were hesitant to say that an experience could not be a symptom of menopause if they had ever heard of another woman attributing that experience to menopause. This is likely to be because the ideas that women had about their bodies were influenced by *unani-tibb*, a Greco-Arab system in which an imbalance in the four humours causes disease in various parts of the body (discussed in Chapters Two and Seven), rather

than a model that stresses responses of specific organs to specific triggers. It may also be in part because many of the women had no formal education to introduce other ideas of the body, instead learning about their bodies, and particularly about issues related to menstruation, from other Pakistani women, both friends and family (see Chapter Seven), and, to a limited extent, local health workers who were often of Pakistani origin as well. However, ideas about menstrual effects of consumption of foods considered to have ‘hot’ or ‘cold’ properties in *unani-tibb* and hydraulic ideas about the body and menstruation, influenced by Islamic teachings, were also evident in the more highly educated women who were interviewed.

As mentioned above, there was some debate about depression and menopause among the women interviewed, which became particularly apparent when women were together talking about menopause symptoms. Some women said that depression is misattributed to menopause by women who have other problems that are making them depressed; while others said depression could be caused by menopause. Some women disapproved of attribution of depression to menopause rather than just disagreeing with it. The reason for this was that depression itself was often disapproved of by women and those suffering from depression were often blamed for their condition. Women’s reactions to other women’s distress were most frequently not supportive or positive, though many women were open about their distress and seemed to be looking for support. Showing signs of unhappiness itself was considered undesirable and could result in women becoming more isolated since women told me that they avoided unhappy women and did not visit their houses, sometimes referring to them as pathetic. This was true even where the woman’s distress was not considered to be related to any norm violating behaviour by herself or her family members. While it seemed very clear to me that the close relationships in which you are visited and visit the homes of other women are important for women’s mental health, this mental health also seemed a prerequisite for having such relationships.

Overall, women derived a lot of their knowledge about menopause symptomatology from other women’s experiences, rather than calling upon culturally-derived beliefs about menopause symptoms that were divorced from the experiences of women they knew. Most of their knowledge of menopause symptoms was gained while spending time with other middle-aged women of Pakistani origin, often when visiting or being visited by friends.



## **Discussion**

The current study has found that British Pakistani women reported having experienced a wide range of changes at menopause, most of which are not on standard symptom checklists. This study has also found that women's attribution of symptoms to menopause differed from that of the developers of the 'everyday complaints' checklist. Findings also include that several variables (age, menopausal status, and migration status) were associated with factor scores from the factor analysis of attribution of symptoms to menopause. Specifically, older women, postmenopausal women, and women raised in Pakistan were more likely to believe that menopause can cause both persistent cough and sore throat (Factor Four) and that women raised in the UK were more likely to attribute a number of indicators of emotional or psychological distress to menopause (Factor Two). The findings regarding attribution of particular symptoms to menopause are most comparable to those of a sub-sample of a study which compared symptom experience and attribution of symptoms to menopause in three groups of women: British South Asian women, white British women, and South Asian women in Delhi (Gupta, Sturdee, and Hunter 2006). The British South Asian women (n=52) in the study lived in Birmingham, were either peri- or postmenopausal, and the majority were Muslims of Pakistani origin (Gupta, Sturdee, and Hunter 2006). Of the 12 symptoms for which attribution to menopause was investigated in both the present study and the study by Gupta, Sturdee, and Hunter, four were attributed to menopause more often in the current study (headache, sleep problems, dizziness, and skin problems), one symptom was attributed to nearly the same degree (depression: 32.7% vs. 32.6% in this study), and seven were attributed to menopause less often in the current study (tiredness, hot flushes, weight gain, vaginal dryness, anxiety, memory loss, night sweats). The difference between these findings may be due in part to their relatively small sample size or the inclusion of some Sikh and Hindu women of Indian origin who may have different beliefs about menopause influenced by their religious beliefs or, for Hindus, their generally higher education and social class (Brown 2000). More women reported hot flushes in their study (75%) than in the current study when limited to only peri- and postmenopausal women (55%), this may be due to their use of a closed question approach. However, a study of 130 Pakistani women living in Lahore that also used a closed question approach and found a similar rate of hot flush reporting (36.2%) to that of this study (Yahya and Rehan 2002). Wasti and colleagues' study (1993) of 650 Pakistani women in Karachi also found similar rates of reporting of hot flushes (36.3%) but considerably higher reporting of night sweats (30.2%) using a closed question

approach. A clinical sample of Pakistani women from Lahore found a much higher rate of urinary complaints (30%) (Khanum, Asif, and Tajammul 2001) than this study, possibly because of a bias in the sample toward women with troublesome symptoms.

A change due to menopause which came up in all three methods of data collection in this study was increase in the size of the abdomen. As mentioned in Chapter One, an ethnographic study of women of South Asian origin in South Africa found that women believed menopause would cause them to have a 'bloated stomach' (du Toit 1990). Another previous study found that a sample of British South Asian women (most of whom were Muslim) reported that they believed menopause can cause "bloating stomach, [s]tomach grows big." (Hunter et al. 2009:31); however, the authors do not comment on this finding despite the fact that other previous studies have found that increases in risk of abdominal obesity in postmenopausal women compared to premenopausal women, independent of age and BMI (Donato et al. 2006) or age and total body fat mass (Toth et al. 2000; Tremollieres, Pouilles, and Ribot 1996). Two recent previous studies found that risk of metabolic syndrome is increased after the last menstrual period, independent of age (Koh et al. 2008) or BMI and age (Joon Cho et al. 2008). These two sets of findings may be related. Menopause may lead to changes in abdominal obesity which increase the risk of metabolic syndrome. These relationships are plausible because of the relationship between reproductive hormones and body fat patterning (Elbers et al. 1999) and the close relationship between abdominal obesity and metabolic syndrome (Després and Lemieux 2006).

Among British Pakistanis greater abdominal obesity and higher body fat mass for BMI than the wider British population has been identified (Bose 1996; McKeigue, Shah, and Marmot 1991), this tendency toward abdominal obesity is suggested to be the proximate cause of high rates of Type II Diabetes in this population (McKeigue et al. 1992; McKeigue, Shah, and Marmot 1991). British Pakistani women may be more sensitive to noticing changes in body fat patterning at menopause because they may be more pronounced (Lear et al. 2007) and because, for these women, small increases in abdominal obesity, which in many other populations are associated with no increased risk, are associated with increased risk of chronic disease (Ramachandra, Snehalatha and Vijay 2004; Snehalatha, Viswanathan, and Ramachandran 2003; Misra, Wasir, and Vikram 2005). Research into the causes of increased risk of Type II Diabetes, cardiovascular disease, and high blood pressure among South Asians with relatively low body mass indices has suggested that intrauterine growth restriction is responsible potentially via effects on prenatal fat deposition or effects of rapid

early postnatal growth (Joglekar et al. 2007; Yajnik 2001). However, other hypotheses which more directly address how differences in fat patterning lead to increased disease risk have been suggested (Sniderman et al. 2007). In any case, the propensity to having greater abdominal fat at all ages has been documented among many South Asian populations, both in South Asia (Dudeja et al. 2001) and in other parts of the world (Banerji et al. 1999; Lear et al. 2007).

These considerations also make the suggestion by women in the present study and in a previous study (Hunter et al. 2009) that menopause caused their ill health, including diabetes, hypertension, or heart problems, also seem less implausible. The British Pakistani women in this study have understandings/beliefs about the relationship between changes in body fat patterning and menopause which have not been explored in previous research. These understandings appear to be related to Pakistanis' increased risk of both developing abdominal obesity and developing chronic disease (as a result of this abdominal obesity). The beliefs of British Asians about diabetes, already recognized as critical to understand in order to provide both health education and healthcare (Hawthorne, Mello and, Tomlinson 1993; Hawthorne 2001; Hawthorne 1994), can be viewed as a possible resource for identifying patterns of risk of diabetes itself in this population. That is, relatively small, menopause-related changes in body fat patterning may indeed be enough to significantly raise the likelihood of developing such health problems in a group with an already high risk of developing diabetes, hypertension, and cardiovascular disease.

Arguably the fact that epidemiologists have begun to investigate the possibility that changes in body fat patterning are related to menopause indicates that the approach that the present study has taken may not be needed, that the 'true' symptoms of menopause will all be indentified without it. However, epidemiology, as an outgrowth of medicine, is far more oriented towards studying changes at menopause that present a risk to health or that can be interpreted in this way, making it part of the trend toward pathologizing menopause, whereas an approach (such as the one taken by the present study) justified on the basis of seeking to understand human variation in menopausal experience with a biosocial approach, has the potential to be open to the investigation of any changes associated with menopause. Other populations worldwide may have similarly unexplored beliefs about changes at menopause which may shed light on biological aspects of the menopause transition.

A particularly interesting finding of the current study is the relationship between factor score for factor four (persistent cough and sore throat) and both participant age and migration status. While it is possible that these results are non-representative of Pakistani women as a whole, since few women attributed both cold and sore throat to menopause, the association between age and factor score for factor four in particular is weak but highly significant. Furthermore, the result is interpretable in light of Pakistani understandings of the body and menopause and may indicate a varying prevalence of these understandings by age and timing of migration.

As explained above, menstrual blood is considered to be a 'hot' and polluting substance, the cessation of its hot polluting flow leads to a 'cold' and unpolluted body. In Lamb's (2000) study of ageing among Bengali women, she found that young women were considered to have hot bodies and older women cold bodies, because of sex and menstruation. The same ideas are likely to apply for the women in the present study who had similar hot/cold beliefs. If at menopause women's bodies are believed to become cold because their 'hot' menstrual blood ceases to flow, this change in humours would be thought to make one more vulnerable to 'cold' illnesses such as cold and flu. Cough and sore throat are symptoms of such 'cold' illnesses, thus, women may believe they are more susceptible to them once menstrual blood no longer flows. Furthermore, these beliefs may be more prevalent in older women and women who were raised in Pakistan who may be inclined to think more in terms of this more traditional system of understanding the body and less in terms of biomedical understandings.

### **Universality of Menopause Experience**

Avis et al. (1993) concluded that it is likely that menopause is uneventful and not uncomfortable for the majority of women, and used this as evidence for rejecting the idea of a universal menopause experience. The level of discomfort and eventfulness of the changes which come with menopause for some women may not be universal and this may be where 'local biologies' become important. Local biologies may determine the extent to which symptoms are major changes from previous experience, and certainly local culture may determine whether this change is likely to be distressing or considered important. However, this does not mean that there are not universal changes, even if they are not universally experienced as uncomfortable or troubling. The elements of the universal menopause experience, which perhaps do not include hot flushes, are more likely to be determined by a process which collects and compares data on the full range of menopause symptoms from

several non-western populations, since this represents the majority of the world, rather than a process which, even as it incorporates limited data from non-western populations, emphasizes comparisons with the experiences of western women. While the approach used in this study does not generate the most comparable data, it can be integrated with an approach that aims to produce data that are more directly comparable with those of previous studies. One such option is to use a symptom list with an additional questions for each item on the list such as “do you think that you have experienced that because of menopause? If no, why not?” along with open-ended questions about menopause symptom experience. Despite recommendations that new studies produce directly comparable data (Obermeyer and Sievert 2007; Sievert 2006; Dennerstein et al. 2002), it may be as important to look in new directions in trying to understand menopause experience as it is to repeat the use of particular methods.

### **Conclusion**

The previous anthropological research on menopause has taken broadly two different streams, which have occasionally merged: one, a more quantitative approach, which looks to develop an understanding of biological mechanisms (but which does not seek to integrate local understandings into the study of menopause symptomatology); and another, a qualitative approach, which seeks to develop a contextualized view of local understandings of menopause among various groups (but which does not seek to elucidate biological mechanisms of changes associated with menopause). The approach of the present study establishes what women feel has changed in themselves due to menopause and what changes they believe/understand to be possible, both of which fit the description for emic data about menopause symptoms given by Obermeyer and Sievert (2007). However, the present study also aimed to relate symptom experience to biological mechanisms. Whilst the symptom experience of non-western groups has been studied before, these groups have not had the opportunity to inform the theoretical developments around menopause symptomatology in the same way that western groups have, despite strong evidence that some non-western groups have developed, over a period of hundreds of years, ideas about the experience of end of menstruation (Lock 1993). The understandings of other groups may indicate new directions for research such as, in the present study, the identification of change in body fat distribution cross-culturally and its relationship to local understandings of menopause and population-specific chronic disease risk.

## **CHAPTER SIX – PREDICTING THE EXPERIENCE AND SEVERITY OF HOT FLUSHES**

As discussed in the previous chapter, hot flushes are a much studied experience and the majority (57.5%) of women in this study considered it to be associated with menopause. However, the experience still varies from woman to woman within a population; some women never experience any hot flushes, while others find they have hot flushes daily for years during the menopausal transition. Likewise the nature of the experience of hot flushes varies. For some women they are a mild and not bothersome experience but for others they can be a serious discomfort. While many studies have looked at the predictors of hot flush experience (see Chapter One), fewer have looked at the predictors of hot flush severity. Based on previous research and my own reasoning, I hypothesised relationships between a number of factors and self-reported hot flush experience and severity.

A few studies have looked at variation in symptom reporting between women from different socio-economic backgrounds using various socio-economic indicators, most of which have found that women who are more educated, have fewer financial problems, or whose own or husbands' occupations are ranked higher on the social class scale are less likely to experience hot flushes (Sievert, Obermeyer, and Price 2006; Gold et al. 2000; Avis, Crawford, and McKinlay 1997; Kuh, Wadsworth, and Hardy 1997; Wilbur et al. 1998; Dennerstein et al. 1993; Schwingl, Hulka, and Harlow 1994). Some studies have found that low socio-economic status is also associated with 'increasing bother' from vasomotor symptoms (Sievert, Obermeyer, and Price 2006). Based on this, I hypothesised that markers of high social status would be associated with less likelihood of having experienced hot flushes and less severe hot flush experience. Such markers include:

- higher occupational social class
- husbands with higher occupational social class
- higher self reported ladder status
- a higher education level
- a history of having worked outside the home.

Studies that have investigated a potential association between menopausal symptom experience and various measures of stress or distress have all found that these indicators are

positively associated with menopausal symptom experience (Hollander et al. 2001; Hardy and Kuh 2002c; Nedstrand et al. 1998; Conboy, Domar, and O'Connell 2001). I hypothesised that indicators of distress would be positively associated with likelihood of having experienced hot flushes and hot flush severity including:

- total anxiety and depression score (Total PADS Score)
- anxiety score
- depression score.

One US longitudinal study has looked at differences in menopausal symptom experience by history of oral contraceptive use (Ford et al. 2005). This study found that, after adjustment for age,  $\log$ BMI,  $\log$ FSH, quartiles of testosterone,  $\log$ estradiol, smoking status, menopausal status, use of HRT, marital status, and parity, oral contraceptive (OC) use was associated with less likelihood of experiencing vasomotor symptoms ( $\beta=0.825$ ;  $p<0.05$ ) (Ford et al. 2005). Ford and colleagues also found that OC use was significantly associated with greater likelihood of being in the highest quartile of bother of vasomotor symptoms independent of all the above confounders. Based on this, I hypothesised that use of oral contraceptives would be associated with less likelihood of having experienced hot flushes and more severe hot flush experience.

In Chapter One I outlined an existing hypothesis that women with greater adiposity should be more likely to experience hot flushes since hot flushes are the result of a narrowed thermoneutral zone and greater adiposity would mean a more insulated body. In addition to the research reviewed in Chapter One, a recent study has found that increased abdominal obesity is associated with increased risk of experiencing hot flushes (Thurston et al. 2008). Based on this, I hypothesised that measures that indicate greater adiposity and/or greater abdominal obesity would be associated with greater likelihood of having experienced hot flushes and more severe hot flush experience including

- greater weight
- waist circumference
- body fat percentage
- body mass index (BMI)
- lower lean body mass.

Physical activity has been hypothesised to reduce likelihood of experiencing hot flushes via altering neurotransmitter release in the hypothalamus resulting in altered regulation of the thermoregulatory centre (Tepper et al. 1987; Freedman, Woodward and Sabharwal 1990; Ivarsson, Spetz and Hammar 1998). Several studies have investigated a potential association between hot flush (or vasomotor symptom) experience and physical activity levels. These studies have found that women who are more physically active are less likely to experience hot flushes (Lindh-Åstrand et al. 2004; Guthrie et al. 2005; Hammar, Berg, and Lindgren 1990; Sternfeld, Quesenberry, Husson 1999; Gold et al. 2000; Sievert, Obermeyer, and Price 2006) and are less likely to experience severe hot flushes (Ivarsson, Spetz and Hammar 1997; Lindh-Åstrand et al. 2004; Guthrie et al. 2005). Daley and colleagues (2007) recently attempted a Cochrane systematic review of the randomised controlled trials assessing the effect of exercise on experience of hot flushes and night sweats. Daley et al. (2007) found that only one small study met the criteria for inclusion so no analysis could be carried out. On the basis of the previous research, I hypothesised that more physical activity, particularly more vigorous physical activity, would be associated with less likelihood of having experienced hot flushes and less severe hot flushes.

Self-reported health status is a factor that may also influence menopause experience. Several studies have used answers to closed questions about health status, with response options often on a scale running from excellent to poor, as possible correlates of menopausal symptom experience. These answers capture the participants' perceptions of their own health which may reflect their beliefs and expectations about health at their age and the presence or absence of illness. These studies have all found that women who rated their health higher on the scale given were less likely to report menopausal symptoms including sleep problems (Shiwaku et al. 2001; Dennerstein et al. 2000), vasomotor symptoms (Sievert, Obermeyer, and Price 2006; Avis et al. 2001), psychosomatic symptoms (Avis et al. 2001), anxiety (Shiwaku et al. 2001), and a feeling of weakness (Shiwaku et al. 2001). I hypothesised that poorer self-reported health would be associated with greater likelihood of having experienced hot flushes and more severe hot flush experience.

Many studies have looked for differences in symptom experience across the menopausal transition with varying results. Some have found that hot flushes increase from premenopause (often defined as regularity in cycles and menstrual period in the past 3 months) to perimenopause (often defined as either irregularity in menstrual cycles and/or no



menstrual cycle in past 3-11 months) (Sievert, Obermeyer, and Price 2006; Shin et al. 2005; Gallicchio et al. 2005; Avis et al. 2001; Hardy and Kuh 2002c; Obermeyer, Ghorayeb, and Reynolds 1999; Obermeyer et al. 2002; Shiwaku et al. 2001; Barentsen et al. 2001) or from premenopause to postmenopause (generally defined as 12 months of amenorrhea) (Sievert, Obermeyer, and Price 2006; Avis et al. 2001; Obermeyer, Ghorayeb, and Reynolds 1999; Obermeyer et al. 2002; Hardy and Kuh 2002c; Aaron et al. 2002; Barentsen et al. 2001; Blümel et al. 2004; Sievert and Espinosa-Hernandez 2003; Ford et al. 2005; Wasti et al. 1993). However, some have found no significant differences in hot flushes or vasomotor symptoms according to menopausal status (Anderson et al. 2004). Based on this previous research, I hypothesised that hot flushes would be more prevalent and severe among:

- perimenopausal women than among premenopausal women
- postmenopausal women (both naturally and surgically postmenopausal) than among premenopausal women
- postmenopausal women (both naturally and surgically postmenopausal) than among perimenopausal women.

Several studies have found that cigarette smoking (including current, long-term, high use, and former smoking) is associated with greater likelihood of experiencing hot flushes (Dennerstein et al. 2000; Gallicchio et al. 2005; Sievert, Obermeyer, and Price 2006; Ford et al. 2005; Whiteman et al. 2003). However, some studies have found no significant association between smoking and hot flush experience (Hollander et al. 2001; Shiwaku et al. 2001). Reasoning that second-hand exposure might influence hot flush experience as well, I hypothesised that exposure to tobacco either through the participant's own use or via second-hand smoke in the home would be associated with greater likelihood of having experienced hot flushes and more severe hot flushes.

Finally, based on previous reports of a high prevalence of hot flushes among British women (75%) (McKinlay and Jeffreys 1974) and somewhat lower range of prevalences of hot flushes from most studies of women in Pakistan (36.2 - 65%) (Yahya and Rehan 2002; Nusrat et al. 2008; Qazi 2006), I hypothesised that indicators of less acculturation or less time spent in the UK would be associated with less likelihood of having experienced hot flushes and less severe hot flush experience including:

- early migration to the UK

- low level of acculturation (based on Suinn Lew-Asian Self Identity Acculturation (SL-ASIA) scale total score)
- having Asian behavioural competency (as measured by the SL-ASIA)
- having Asian values (as measured by the SL-ASIA)
- being from the *Choudhary Jatt biradari*
- having had a consanguineous marriage.

Tables 6.1 and 6.2 show descriptive statistics for all variables in the analyses in this chapter.

**Table 6.1: Descriptive statistics for continuous variables**

Variable	N	Mean $\pm$ SD	Median	Range	Interquartile Range
Age at interview (years)	253	49.53 $\pm$ 5.49	49.25	39.33-61.17	45.00-53.67
Lifetime employment (years)	92	9.91 $\pm$ 8.30	7	0.21-33.00	3.00-15.75
Ladder Status	254	4.7 $\pm$ 2.0	4.5	1.0-10.5	3.5-5.5
Total Suinn Lew-Asian Self-Identity Acculturation (SL-ASIA) Score	256	1.58 $\pm$ 0.42	1.43	1.06-3.24	1.29-1.80
Total Pakistan Anxiety and Depression Score (PADS)	234	8.5 $\pm$ 6.6	7	0-28	3-13
Total Anxiety Score	234	5.1 $\pm$ 3.8	5	0-15	2-8
Total Depression Score	234	3.4 $\pm$ 3.2	3	0-15	1-5
Waist Circumference (cm)	191	94.8 $\pm$ 10.8	95	68.6-122.9	87.4-101.1
Body Fat Percentage	222	44.5 $\pm$ 5.3	44.3	23.5-58.2	41.1-47.6
Lean Body Mass (kg)	221	41.7 $\pm$ 4.9	41.6	29.4-58.7	38.4-45.2
Body Mass Index (kg/m <sup>2</sup> )	238	31.61 $\pm$ 5.49	31.07	19.74-53.79	27.90-34.48

**Table 6.2: Descriptive statistics for categorical and ordinal variables**

<b>Variable</b>	<b>N (%)</b>
Reported Experience of Hot Flushes	n=257
No	153 (59.5)
Yes	104 (40.5)
Severity of Hot Flushes	n=103
Not at all OR A little bit	15 (14.6)
Moderately	28 (27.2)
Quite a bit	29 (28.2)
Very	31 (30.1)
Timing of Migration	n=257
On/before menarche (incl. UK born)	31 (12.6)
After menarche	216 (87.4)
Highest Level of Education Achieved	n=256
No formal education	98 (38.3)
≤5 years of schooling	49 (19.1)
6-10 years of schooling	63 (24.6)
≥ 11 years of schooling	46 (18.0)
Ever worked outside the home	n=256
No	166 (64.8)
Yes	90 (35.2)
Own Social Class	n=257
Never worked	166 (64.6)
I and II	27 (10.5)
IIIN and IIIM	12 (4.7)
IV and V	52 (20.2)
Husband's Social Class	n=236
Never worked	55 (23.3)
I and II	64 (27.1)
IIIN and IIIM	97 (41.1)
IV and V	20 (8.5)
Ever Use Tobacco	n=257
No	232 (90.3)
Yes	25 (9.7)
Any Family Member Smoke Inside House	n=256
Yes	77 (30.1)
No	179 (69.9)

Light Physical Activity	n=257
Less than once per week	28 (10.9)
1-3 times per week	21 (8.2)
4-7 times per week	208 (80.9)
Moderate Physical Activity	n=254
Less than once per week	98 (38.6)
1-3 times per week	80 (31.5)
4-7 times per week	76 (29.9)
Vigorous Physical Activity	n=257
Less than once per week	207 (80.5)
1-3 times per week	24 (9.3)
4-7 times per week	26 (10.1)
Ever Use Oral Contraceptives	n=257
No	173 (67.3)
Yes	84 (32.7)
Self-reported Health Status	n=254
Excellent	8 (3.1)
Very Good	16 (6.3)
Good	121 (47.6)
Fair	63 (24.8)
Poor	46 (18.1)
Ladder Status	n=256
High (<2.5)	30 (11.7)
Moderately High (2.5-4.5)	99 (38.7)
Moderately Low (5.0-7.0)	99 (38.7)
Low (7.5-10.5)	28 (10.9)
Suinn Lew-Asian Self-Identity Acculturation (SL-ASIA) Score in three categories	n=256
Highly Asian identified (1-1.49)	145 (56.6)
Moderately Asian identified (1.5-1.9)	70 (27.3)
More Biculturally identified ( $\geq 2.0$ )	41 (16.0)
SL-ASIA Values Score	n=206
Asian values	154 (74.4)
Bicultural values	52 (25.2)
SL-ASIA Behavioural Competencies Score	n=235
Asian Behavioural Competency	168 (71.5)
Bicultural Behavioural Competency	67 (28.5)

Total Pakistan Anxiety and Depression Scale (PADS) Score	n=234
Below clinical threshold	163 (69.7)
At or above clinical threshold	71 (30.3)
Total Anxiety Score	n=234
Below clinical threshold	139 (59.4)
At or above clinical threshold	95 (40.6)
Total Depression Score	n=234
Below clinical threshold	192 (82.1)
At or above clinical threshold	42 (17.9)
Menopause Status	n=251
Surgically Postmenopausal	18 (7.2)
Naturally Postmenopausal	84 (33.5)
Perimenopausal	47 (18.7)
Premenopausal	102 (40.6)
Consanguineous Marriage	n=257
No, not related to her husband	64 (24.9)
Yes, related to her husband	193 (75.1)
Age at Natural Menopause (years)	n=87
36-44	15 (17.2)
45-48	13 (14.9)
49	10 (11.5)
50	11 (12.6)
51-52	8 (9.2)
≥ 53	30 (34.5)
<i>Choudhary Jatt biradari</i>	n=250
Yes	73 (29.2)
No	177 (70.8)

### **Predictors of Hot Flush Experience**

The results of binary logistic regression with continuous independent variables in separate models are presented in Table 6.3. None of these variables achieved statistical significance as predictors of the experience of hot flushes.

**Table 6.3: Continuous Predictors of Hot Flush Experience in Univariable Models**

Variable	N	Odds Ratio	95% CI	p value
Lifetime employment (years)	92	1.046	0.994, 1.101	0.080
Ladder Status	254	0.996	0.881, 1.126	0.948
Total SL-ASIA Score	256	1.342	0.742, 0.427	0.330
Total PADS Score	234	1.020	0.980, 1.061	0.325
Total Anxiety Score	234	1.029	0.961, 1.102	0.419
Total Depression Score	234	1.044	0.963, 1.132	0.292
Waist Circumference (cm)	191	1.013	0.987, 1.041	0.334
Body Fat Percentage	222	0.994	0.944, 1.047	0.821
Lean Body Mass (kg)	221	0.957	0.905, 1.012	0.125
Body Mass Index (kg/m <sup>2</sup> )	238	0.975	0.929, 1.024	0.314
Age at Natural Menopause (years)	76	1.043	0.945, 1.152	0.402

The results of binary logistic regression with categorical or ordinal predictors in separate univariable models are presented in Table 6.4. The variables with at least one level achieving statistical significance are all related in some way to social or socio-economic status: educational attainment, occupational social class, ladder status, and *biradari* (which can be seen as related to acculturation or status). Menopause status was also found to be significantly associated with the experience of hot flushes with premenopausal women less likely than all others to report the experience of hot flushes. These results showed that the experience of hot flushes was not significantly associated with timing of migration, depression, anxiety, tobacco use, exposure to second hand smoke, levels of any kind of physical activity, any of the measures of adiposity, any variable related to reproductive or childbearing history (including oral contraceptive use), or any measure of acculturation. They also showed that odds of experiencing hot flushes were significantly lower in women who had five years or less of formal education compared to those who had any post-secondary education (OR: 0.337; 95% CI: 0.131, 0.867) and also significantly lower in women whose *biradari* was *Choudhary Jatt* compared to women from any other *biradari* (OR: 0.417; 95% CI: 0.229, 0.760). Women who were from a higher occupational social class (social class I or II) had higher odds

(OR: 3.825; 95% CI: 1.438, 10.173) of experiencing hot flushes than their lower social class counterparts (social class IV or V). Compared with women who rated themselves as low on the status ladder, women who rated themselves moderately high (OR: 3.314; 95% CI: 1.237, 8.876) or moderately low (OR: 2.933; 95% CI: 1.094, 7.862) were more likely to experience hot flushes.

**Table 6.4: Categorical and Ordinal Predictors of Hot Flush Experience in Univariable Models**

Variable	Categories	N	Odds Ratio	95% CI	p value
Timing of Migration	On/before menarche (incl. UK born)	31	0.610	0.372, 1.787	0.610
	After menarche	216	-	-	-
	Model*	-	-	-	0.608
Highest Level of Education Achieved	No formal education	98	0.550	0.241, 1.257	0.156
	≤5 years of schooling	49	0.337	0.131, 0.867	<b>0.024</b>
	6-10 years of schooling	63	0.503	0.208, 1.214	0.126
	11-12 years of schooling	16	0.459	0.132, 1.591	0.219
	University or other post-secondary	30	-	-	-
	Model*	-	-	-	0.250
Ever worked outside the home	No	166	0.881	0.523, 1.484	0.633
	Yes	90	-	-	-
	Model*	-	-	-	0.633
Own Social Class	Never worked	166	1.448	0.744, 2.819	0.276
	I and II	27	3.825	1.438, 10.173	<b>0.007</b>
	IIIN and IIIM	12	2.225	0.628, 8.057	0.213
	IV and V	52	-	-	-
	Model*	-	-	-	<b>0.042</b>

Husband's Social Class	Never worked	55	2.250	0.754, 6.711	0.146
	I and II	64	1.309	0.443, 3.870	0.626
	IIIN and IIIM	97	1.317	0.465, 3.735	0.604
	IV and V	20	-	-	-
	Model*	-	-	-	0.309
Ever Use Tobacco	No	232	0.852	0.370, 1.957	0.705
	Yes	25	-	-	-
	Model*	-	-	-	0.706
Any Family Member Smoke Inside House	Yes	77	0.857	0.495, 1.484	0.582
	No	179	-	-	-
	Model*	-	-	-	0.581
Light Physical Activity	Less than once per week	28	0.918	0.410, 2.057	0.835
	1-3 times per week	21	0.709	0.275, 1.831	0.478
	4-7 times per week	208	-	-	-
	Model*	-	-	-	0.765
Moderate Physical Activity	Less than once per week	98	1.376	0.748, 2.532	0.305
	1-3 times per week	80	0.922	0.481, 1.765	0.922
	4-7 times per week	76	-	-	-
	Model*	-	-	-	0.375
Vigorous Physical Activity	Less than once per week	207	1.929	0.777, 4.791	0.157
	1-3 times per week	24	2.297	0.705, 7.485	0.168
	4-7 times per week	26	-	-	-
	Model*	-	-	-	0.291
Ever Use Oral Contraceptives	No	173	0.999	0.588, 1.700	0.998
	Yes	84	-	-	-
	Model*	-	-	-	0.998



Self-reported Health Status	Excellent	8	0.222	0.025, 1.961	0.176
	Very Good	16	1.556	0.495, 4.888	0.449
	Good	121	0.889	0.442, 1.787	0.741
	Fair	63	1.507	0.697, 3.258	0.297
	Poor	46	-	-	-
	Model*	-	-	-	0.166
Ladder Status	High (0-2.49)	30	1.116	0.324, 3.845	0.862
	Moderately High (2.5-4.9)	99	3.314	1.237, 8.876	<b>0.017</b>
	Moderately Low (5.0-7.49)	99	2.933	1.094, 7.862	<b>0.032</b>
	Low (7.5-10.5)	28	-	-	-
	Model*	-	-	-	<b>0.011</b>
SL-ASIA Score in three categories	Highly Asian identified (1-1.49)	145	0.680	0.339, 1.366	0.278
	Moderately Asian identified (1.5-1.9)	70	0.620	0.284, 1.355	0.231
	More Biculturally identified ( $\geq 2.0$ )	41	-	-	-
	Model*	-	-	-	0.459
SL-ASIA Values Score	Asian values	154	0.897	0.476, 1.691	0.736
	Bicultural values	52	-	-	-
	Model*	-	-	-	0.736
SL-ASIA Behavioural Competencies Score	Asian Behavioural Competency	168	0.708	0.400, 1.252	0.235
	Bicultural Behavioural Competency	67	-	-	-
	Model*	-	-	-	0.236

Menopause Status	Surgically Postmenopausal	18	3.280	1.147, 9.376	<b>0.027</b>
	Naturally Postmenopausal	84	6.029	3.133, 11.605	<b>&lt;0.001</b>
	Perimenopausal	47	4.278	2.016, 9.078	<b>&lt;0.001</b>
	Premenopausal	102	-	-	-
	Model*	-	-	-	<b>&lt;0.001</b>
Consanguineous Marriage	No, not related to her husband	64	1.681	0.950, 2.972	0.074
	Yes, related to her husband	193	-	-	-
	Model*	-	-	-	0.075
Age at Natural Menopause (years)	36-44	15	0.250	0.058, 1.070	0.062
	45-48	13	0.857	0.233, 3.159	0.817
	49	10	1.000	0.239, 3.159	10.000
	50	11	1.750	0.422, 7.253	0.440
	51-52	8	1.000	0.210, 4.758	10.000
	≥ 53	30	-	-	-
	Model*	-	-	-	0.294
<i>Choudhary Jatt biradari</i>	Yes	73	0.417	0.229, 0.760	<b>0.004</b>
	No	177	-	-	-
	Model*	-	-	-	<b>0.003</b>

\*Model p values are from Omnibus Test of Model Coefficients

The variables which were found to be significant predictors of hot flush experience were put into a model together to assess their independence (Table 6.5). Menopause status was converted into a three category variable and included in the model as a potential confounder of other relationships. The predictive power and statistical significance of all the predictor variables other than menopause status was somewhat attenuated. The relationship between experience of hot flushes and both educational attainment and social class became non-significant after controlling for other predictors.

**Table 6.5: Predictors of Experience of Hot Flushes in a Single Multivariable Model**

Variable	Categories	N	Odds Ratio	95% CI	p value
Highest Level of Education Achieved	No formal education	94	0.699	0.156, 3.140	0.640
	≤5 years of schooling	46	0.585	0.124, 2.758	0.498
	6-10 years of schooling	62	0.511	0.121, 2.167	0.363
	11-12 years of schooling	14	0.673	0.107, 4.232	0.673
	University or other post-secondary	26	-	-	-
<i>Choudhary Jatt biradari</i>	Yes	72	0.452	0.216, 0.945	<b>0.035</b>
	No	170	-	-	-
Ladder Status*	High (0-2.49)	28	0.540	0.131, 2.232	0.394
	Moderately High (2.5-4.9)	91	2.832	0.964, 8.318	0.058
	Moderately Low (5.0-7.49)	95	2.608	0.894, 7.604	0.079
	Low (7.5-10.5)	28	-	-	-
Own Social Class	Never worked	157	1.305	0.593, 2.872	0.509
	I and II	23	2.961	0.637, 13.770	0.166
	IIIN and IIIM	10	2.730	0.522, 14.273	0.234
	IV and V	52	-	-	-
Menopause status	Postmenopausal (natural or surgical)	98	6.039	2.966, 12.295	<b>&lt;0.001</b>
	Perimenopausal	45	4.652	2.008, 10.778	<b>&lt;0.001</b>
	Premenopausal	99	-	-	-

Model p=0.001

\*The variable Ladder Status was significant at the 0.01 level though no individual level reached statistical significance in this model.

Tests were run to see which of the two non-significant predictors (social class and education level) caused the attenuation in ladder status and *biradari* (results not shown), one with education in the model and social class not in the model, and vice versa. Education appeared to have had little effect on other predictors besides social class, with which one would expect it to be correlated. On the other hand, social class did appear to be responsible for the changes in odds ratio and significance of ladder status and *biradari*. Thus, the final model included social class but not educational attainment variable; the results are presented in Table 6.6.

**Table 6.6: Final Multivariable Model of Predictors of Experience of Hot Flashes**

Variable	Categories	N	Odds Ratio	95% CI	p value
<i>Choudhary Jatt biradari</i>	Yes	72	0.500	0.251, 0.995	<b>0.048</b>
	No	171	-	-	-
Ladder Status	High (0-2.49)	28	0.555	0.136, 2.263	0.412
	Moderately High (2.5-4.9)	92	2.733	0.938, 7.961	0.065
	Moderately Low (5.0-7.49)	95	2.626	0.904, 7.622	0.076
	Low (7.5-10.5)	28	-	-	-
Own Social Class	Never worked	158	1.293	0.605, 2.764	0.508
	I and II	23	4.288	1.292, 14.229	<b>0.017</b>
	IIIN and IIIM	10	2.610	0.538, 12.655	0.234
	IV and V	52	-	-	-
Menopause Status	Postmenopausal (natural or surgical)	98	6.025	3.014, 12.045	<b>&lt;0.001</b>
	Perimenopausal	46	4.293	1.903, 9.680	<b>&lt;0.001</b>
	Premenopausal	99	-	-	-

Model  $p < 0.001$

### **Predictors of Hot Flush Severity**

As outlined in Chapter Three, not all of the hypotheses could be tested because small group sizes created an excessive number of zero cells which made the logistic regression models unstable. In order to keep some variables in the analysis, these variables were modified to reduce the number of zero cells in the chi-squared tables on which the logistic regression models are based. In some cases this meant continuous variables were converted to categorical variables, in other cases it meant that categories were collapsed together.

The results of testing predictors of hot flush severity using multinomial logistic regression are presented in Table 6.7. Similar to the results above of predictors of hot flush experience, these results showed that the severity of hot flushes was not significantly associated with levels of any kind of physical activity, most of the measures of adiposity, OC use, educational attainment, timing of migration, depression, nor tobacco exposure.

In contrast, however, hot flush severity was related to anxiety, self-reported health, and acculturation. Women who reported their health as good rather than poor were more likely to have reported hot flushes which were ‘quite a bit’ severe than they were to report ‘very’ severe hot flushes (OR: 11.200; 95% CI: 1.202, 104.329). Compared with women who were more bicultural, those who were highly Asian according to the SL-ASIA Scale were more likely to have reported either ‘moderately’ severe (OR: 5.455; 95% CI: 1.226, 24.261) or ‘quite a bit’ severe (OR: 6.364; 95% CI: 1.445, 28.015) hot flushes than they were to have reported ‘very’ severe hot flushes. Women who scored below the threshold on the Pakistan Anxiety and Depression Scale were more likely than those scoring above the threshold to report hot flushes which were ‘not at all’ or ‘a little bit’ severe (OR: 19.091; 95% CI: 2.174, 167.677) or ‘moderately’ severe (OR: 7.500; 95% CI: 2.005, 28.053) rather than ‘very’ severe. Additionally, women who scored below the threshold for anxiety on the Anxiety Score (AS) Scale were more likely to have experienced hot flushes that they rated ‘not at all’ or ‘a little bit’ severe (OR: 21.667; 95% CI: 3.780, 124, 186), ‘moderately’ severe (OR: 7.500; 95% CI: 2.181, 25.795), or ‘quite a bit’ severe (OR: 3.333; 95% CI: 1.029, 10.796) than they were to have reported ‘very’ severe hot flushes. The model containing menopausal status was found to be significant though no single status category had a significant association with severity of hot flushes.

**Table 6.7: Predictors of Hot Flush Severity in Univariable Models**

Variable	Categories	N	Not at all OR A little bit*			Moderately*			Quite a bit*		
			Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value
Timing of Migration	On/before menarche (incl. UK born)	11	0.369	0.039, 3.505	0.386	0.185	0.020, 1.696	0.185	0.835	0.199, 3.502	0.805
	After menarche	86	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.318
Highest Level of Education Achieved	No formal education	41	0.750	0.165, 3.399	0.709	2.500	0.529, 11.813	0.247	2.100	0.551, 8.002	0.277
	≤5 years of schooling	15	0.900	0.120, 6.777	0.919	4.500	0.730, 27.739	0.105	1.350	0.211, 8.617	0.751
	6-10 years of schooling	25	0.900	0.154, 5.258	0.907	4.500	0.851, 23.801	0.077	2.100	0.448, 9.836	0.346
	≥ 11 years of schooling	22	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.653
Ever worked outside the home	No	63	0.669	0.193, 2.324	0.527	1.912	0.641, 5.701	0.245	1.699	0.584, 4.944	0.330
	Yes	38	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.322
Any Family Member Smoke Inside House	Yes	29	0.628	0.161, 2.457	0.504	0.471	0.146, 1.516	0.471	0.658	0.219, 1.981	0.457
	No	73	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.637
Light Physical Activity	Less than once per week	11	0.348	0.037, 3.259	0.355	0.147	0.016, 1.317	0.087	0.460	0.103, 2.056	0.309
	1-3 times per week	7	3.136	0.456, 21.566	0.245	0.517	0.038, 5.204	0.442	0.460	0.039, 5.418	0.537
	4-7 times per week	85	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.220

Moderate Physical Activity	Less than once per week	44	1.846	0.382, 8.925	0.446	0.503	0.145, 1.750	0.280	1.143	0.320, 4.081	0.837
	1-3 times per week	29	0.889	0.138, 5.723	0.901	0.646	0.173, 2.415	0.516	1.143	0.290, 4.507	0.849
	4-7 times per week	29	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.682
Vigorous Physical Activity	Less than once per week	85	0.769	0.157, 3.759	0.746	1.154	0.277, 4.807	0.844	0.737	0.198, 2.740	0.649
	1-7 times per week	18	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.917
Ever Use Oral Contraceptives	No	69	2.889	0.676, 12.345	0.152	1.300	0.454, 3.722	0.625	1.896	0.642, 5.597	0.247
	Yes	34	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.421
Self-reported Health Status	Excellent OR Very Good	9	2.667	0.250, 28.438	0.417	1.333	0.144, 12.369	0.800	12.000	0.773, 186.362	0.076
	Good	43	1.600	0.302, 8.490	0.581	1.733	0.453, 6.631	0.422	11.200	1.202, 104.329	<b>0.034</b>
	Fair	31	0.727	0.115, 4.585	0.735	0.848	0.205, 3.513	0.821	7.273	0.768, 68.887	0.084
	Poor	18	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.408
Ladder Status	5 <sup>th</sup> rung or higher	75	1.636	0.371, 7.217	0.515	1.882	0.545, 6.501	0.318	0.669	0.228, 1.969	0.466
	Lower than 5 <sup>th</sup> rung	28	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.335
SL-ASIA Score in three categories	Highly Asian identified (1-1.49)	57	1.591	0.356, 7.112	0.543	5.455	1.226, 24.261	<b>0.026</b>	6.364	1.445, 28.015	<b>0.014</b>
	Moderately Asian identified (1.5-1.9)	25	1.111	0.213, 5.802	0.901	2.593	0.511, 13.165	0.251	1.852	0.341, 10.047	0.475
	More Biculturally identified (≥ 2.0)	20	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.094

SL-ASIA Values Score	Asian values	63	0.900	0.226, 3.592	0.881	1.214	0.358, 4.124	0.756	3.500	0.799, 15.340	0.097
	Bicultural values	23	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.259
SL-ASIA Behavioural Competencies Score	Asian Behavioural Competency	65	0.583	0.160, 2.123	0.414	2.444	0.732, 8.167	0.146	1.750	0.559, 5.481	0.337
	Bicultural Behavioural Competency	32	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.146
Total PADS Score	Below clinical threshold	65	19.091	2.174, 167.677	<b>0.008</b>	7.500	2.005, 28.053	<b>0.003</b>	2.455	0.820, 7.350	0.109
	At or above clinical threshold	30	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	<b>0.001</b>
Total Anxiety Score	Below clinical threshold	51	21.667	3.780, 124.186	<b>0.001</b>	7.500	2.181, 25.795	<b>0.001</b>	3.333	1.029, 10.796	<b>0.045</b>
	At or above clinical threshold	44	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	<b>&lt;0.001</b>
Total Depression Score	Below clinical threshold	77	7.412	0.835, 65.811	0.072	4.059	0.953, 17.290	0.058	2.435	0.691, 8.587	0.166
	At or above clinical threshold	18	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.091
Menopausal Status	Postmenopausal (natural or surgical)	57	0.250	0.056, 1.117	0.070	0.438	0.118, 1.621	0.216	4.250	0.451, 40.013	0.206
	Perimenopausal	24	0.278	0.038, 2.037	0.208	0.625	0.127, 3.066	0.562	8.333	0.776, 89.470	0.080
	Premenopausal	20	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	<b>0.040</b>
Con-sanguineous Marriage	No, not related to her husband	32	0.280	0.053, 1.472	0.133	0.727	0.242, 2.188	0.571	1.111	0.389, 3.177	0.844
	Yes, related to her husband	71	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.315



Age at Natural Menopause (years)	36-48	9	1.750	0.173, 17.686	0.635	1.400	0.144, 13.568	0.772	1.050	0.137, 8.021	0.962
	49-50	11	0.583	0.044, 7.661	0.682	0.933	0.111, 7.820	0.949	1.167	0.208, 6.559	0.861
	≥ 51	26	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.990
Body Mass Index	Non-obese (BMI<30)	41	0.281	0.052, 1.518	0.140	1.427	0.479, 4.248	0.523	2.473	0.827, 7.393	0.105
	Obese (BMI ≥ 30)	51	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	<b>0.037</b>
Z Score for Lean Mass in kg	<-0.5	27	0.296	0.035, 2.524	0.266	0.711	0.140, 3.606	0.681	0.508	0.107, 2.404	0.393
	-0.5-0.5	39	0.718	0.124, 4.158	0.712	0.615	0.130, 2.905	0.540	0.396	0.089, 1.762	0.224
	>0.5	19	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.782
Z Score for Fat Mass in kg	<-0.5	28	0.500	0.065, 3.845	0.505	4.500	0.670, 30.230	0.122	1.571	0.359, 6.875	0.548
	-0.5-0.5	37	0.692	0.141, 3.404	0.651	2.769	0.466, 16.459	0.263	0.396	0.092, 1.699	0.212
	>0.5	19	-	-	-	-	-	-	-	-	-
	Model <sup>†</sup>	-	-	-	-	-	-	-	-	-	0.132

\* Very is the reference category of the dependent variable.

<sup>†</sup> Model p value is from Likelihood Ratio Test.

The variables which were found to be significant predictors of severity of hot flushes were put into a model together to assess their independence (along with menopausal status as a potential confounder) (Table 6.8). Since the PADS Score is made up of the value of AS Score plus the value of another variable, DS Score, PADS Score and AS Score were not put into the same model. Instead, each was put into a separate model with the rest of the predictors and the fit of the two models was compared. Based on the Likelihood Ratio Chi-Squared test of the fit of the model and the significance of the variables, AS Score resulted in a better fit and was significant while PADS Score was less well fitting and was not significant when included in the model (results not shown). Due to high standard errors as a result of

small group sizes and numerous zero cells when the model was run, each of the predictors was dichotomised and the model re-tested. Menopause status was kept in the model as a potential confounder of other relationships as with the analyses above.

The two category version of SL-ASIA Score was relatively unaffected as both the odds ratios and p values were close to those from the 3 category univariable analysis. Total anxiety score was no longer significant in predicting which women would rate their hot flushes ‘very’ severe and which would rate them as ‘quite a bit’ severe. The odds ratios for anxiety score in predicting the other levels of hot flush severity were less highly significant. Some of these differences may be due to the reduced n (number of observations) in the multivariable analyses, mostly due to the relatively small n of the body mass index variable.

Neither body mass index nor the two category version of self-reported health status was significantly associated with severity of hot flushes after controlling for other predictors. However, excluding them from the model caused important changes to other predictors (results not shown). Both BMI and self-reported health status partly confounded anxiety score. When either was excluded from the model anxiety score became more highly significant as a predictor of all three levels of severity and the odds ratios increased. Conversely, controlling for BMI increased the predictive power of acculturation over hot flush severity.

**Table 6.8: Predictors of Severity of Hot Flushes in a Single Multivariable Model**

Variable	Categories	N	Not at all OR A little bit*			Moderately*			Quite a bit*		
			Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value
Body Mass Index	Non-obese (BMI<30)	36	0.144	0.014, 1.528	0.108	1.370	0.348, 5.392	0.653	2.822	0.736, 10.818	0.130
	Obese (BMI ≥ 30)	45	-	-	-	-	-	-	-	-	-
Self-reported Health Status	Excellent, Very Good OR Good	44	1.636	.262, 10.223	0.599	2.084	0.468, 9.280	0.335	2.438	0.560, 10.608	0.235
	Fair OR Poor	37	-	-	-	-	-	-	-	-	-
SL-ASIA Score in TWO categories	Highly Asian identified (1-1.49)	51	0.855	0.150, 4.862	0.860	5.266	1.271, 21.818	<b>0.022</b>	5.788	1.436, 23.322	<b>0.014</b>
	Less Asian identified (≥ 1.5)	30	-	-	-	-	-	-	-	-	-

Total Anxiety Score	Below clinical threshold	46	12.877	1.632, 101.627	<b>0.015</b>	6.423	1.377, 29.953	<b>0.018</b>	3.202	0.718, 14.283	0.127
	At or above clinical threshold	35	-	-	-	-	-	-	-	-	-
Menopause Status	Postmenopausal (natural or surgical)	47	0.235	0.040, 1.373	0.108	0.547	0.135, 2.225	0.400	0.661	0.168, 2.603	0.554
	Premenopausal OR perimenopausal	34	-	-	-	-	-	-	-	-	-

Model  $p < 0.001$

\* Very is the reference category of the dependent variable.

### Discussion

Of the many hypotheses tested, only four were at all supported by the data. These were that (1) anxiety would be positively associated with hot flush severity, (2) poorer self reported health would be associated with more severe hot flush experience, (3) less acculturation would be associated with less severe hot flush experience, and (4) being from the *Choudhary Jatt biradari* would be associated with less likelihood of experiencing hot flushes. In a further three cases (educational attainment, social status, and social class) relationships found were in the opposite direction to that predicted.

The main findings of these analyses are:

- British Pakistani women who had a higher occupational social class were more likely to have experienced hot flushes than their lower social class counterparts
- women whose *biradari* was *Choudhary Jatt* were less likely to have experienced hot flushes than women from other *biradaris*
- reported severity of hot flushes was lower among less acculturated women were than among women who were more acculturated to British society
- reported severity of hot flushes was lower among women who scored below the threshold for anxiety than among women who scored above the threshold for anxiety

Each of these associations was independent of the other significant associations found in the same set of analyses. Some associations were found which were not independent of the above associations. These include that women who perceived themselves to be of higher status were more likely to have experienced hot flushes than their lower status counterparts, that less educated women had decreased odds of having experienced hot flushes, and that good self-reported health was found to be associated with reporting of less severe hot flushes.

Menopausal status was also found to be significantly associated with hot flush experience and severity. These findings concur with a large number of studies that found that likelihood of symptoms was higher in perimenopausal women compared to premenopausal women (Shin et al. 2005; Gallicchio et al. 2005; Avis et al. 2001; Young et al. 2003; Hardy and Kuh 2002c; Obermeyer, Ghorayeb, and Reynolds 1999; Obermeyer et al. 2002; Anderson et al. 2004; Shiwaku et al. 2001; Barentsen et al. 2001) and higher in postmenopausal women compared to premenopausal women (Sievert, Obermeyer, and Price 2006; Avis et al. 2001; Young et al. 2003; Obermeyer, Ghorayeb, and Reynolds 1999; Obermeyer et al. 2002; Hardy and Kuh 2002c; Anderson et al. 2004; Shiwaku et al. 2001; Aaron et al. 2002; Barentsen et al. 2001; Blümel et al. 2004). The hypotheses that reporting of hot flushes would be more prevalent among perimenopausal and (both naturally and surgically) postmenopausal women than among premenopausal women and that experience of hot flushes would be more prevalent among (both naturally and surgically) postmenopausal women than among perimenopausal women were not supported by the results. Additionally, the hypotheses that hot flushes would be reported to be more severe among perimenopausal and (both naturally and surgically) postmenopausal women than among premenopausal women and that hot flushes would be reported to be more severe among postmenopausal women (both naturally and surgically postmenopausal) than among perimenopausal women were also not supported by the results. The lack of significant associations may be due to the low number of surgically postmenopausal women in this sample (n=18). Since women who undergo surgical menopause are likely to experience sudden hormonal changes at menopause (particularly those who undergo unilateral or bilateral oophorectomy<sup>16</sup>) they might be more likely to experience hot flushes because of this sudden change. It is also possible that a precise measure of the length of time since menopause and how frequently hot flushes are experienced would result in a clearer picture of patterns in postmenopausal hot flush experience. No significant association was found between age at menopause and hot flush experience in contrast to the findings of two cohort studies in which women with a later menopause were at lower risk of menopausal symptoms (such as hot flushes) than those with an earlier menopause (Sabia et al. 2007; Kuh, Wadsworth, and Hardy 1997).

This study used a tool for assessing anxiety which was developed in Urdu for use with Pakistanis, the Pakistan Anxiety and Depression Scale, and the clinical cut-offs developed by the authors proved meaningful in the analysis of severity of hot flushes (Mumford et al.

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<sup>16</sup> A term meaning the surgical removal of an ovary or ovaries.

2005). This analysis cannot, however, distinguish between two possible explanations for the association between anxiety and more severe hot flushes: that greater anxiety predisposes women to more severe hot flushes versus that greater anxiety is a result of more severe hot flush experience. However, that the relationship between anxiety and more severe hot flushes was found to be independent of self-reported health provides some evidence that women who reported more severe hot flushes were not simply more negative about their physical health. However it does indicate that the association between self-reported health and hot flushes found in a previous study may have been confounded by anxiety (Sievert, Obermeyer, and Price 2006).

The present study's finding regarding anxiety is similar to those of other studies that have found that indicators of anxiety, stress, or distress (generally assessed using questions similar to those in the anxiety scale used in the present study) are positively associated with menopausal symptom experience (Hollander et al. 2001; Hardy and Kuh 2002c; Nedstrand et al. 1998; Conboy, Domar, and O'Connell 2001; Hunter et al. 2009). Depression, however, was not found to be associated with hot flush severity, nor with likelihood of experiencing hot flushes. Most previous studies have used tools which measured stress, distress, or anxiety, but not depression separately. It is may be more likely that some part of the physical stress reaction influences hot flush severity rather than that simply any unpleasant emotional states influence hot flush severity. Since both anxiety and depression were assessed at the time of interview rather than at the time of the experience of hot flushes (for those women who had experienced hot flushes), these results should be interpreted with care and future research should aim to avoid such temporal problems.

*Biradari*, as discussed in Chapter Two and Four, refers to extended patrilineal kinship group and has a relationship to the concept of caste. Since most of the *Choudhary Jatts* interviewed were from Mirpur District in *Azad Kashmir*, it seemed possible that the association between membership in the *Choudhary Jatt biradari* and less likelihood of experiencing hot flushes was simply a reflection of a difference in risk of experiencing hot flushes between women from Mirpur and those from other parts of Pakistan. In order to assess this, a dichotomous variable reflecting Mirpuri-ness was tested for an association with experience of hot flushes. Mirpur as birthplace was not a significant predictor of hot flush experience either on its own in a model, with *biradari* in the model, or in the final model and there was virtually no effect on the predictive power of other variables when it was put into the model (results not shown). The mechanism underlying the association between *Choudhary Jatt biradari* and decreased

likelihood of experiencing hot flushes may be the same as that underlying the relationships between hot flush severity and acculturation and hot flush severity and anxiety. As discussed in Chapter Four, the members of the *Choudhary Jatt biradari* in Bradford tend to be less acculturated and are perceived to be conservative. Less acculturated women may find it easier to gain social support and, therefore, experience less anxiety (though these results were independent of one another) and the same may be true for *Choudhary Jatt* women since the *biradari* network of these women is more extensive in the areas where they live. Similarly, greater anxiety may be a sign of inadequate social support.

Some previous studies have found that lack of social support influences menopausal symptom experience. A French study found that other menopausal symptoms (psychological and breast symptoms) were more likely in women with low social support and unsatisfactory social relations, though they did not find such a relationship with hot flushes (n=1180) (Duché et al. 2006). These authors suggested that the role of 'biomedical factors' may be greater in the case of hot flushes. However, a large Japanese study (n= 2886), which looked into the role of social support on hot flushes, found that women who reported not having people in their lives around whom they felt relaxed were more likely to experience hot flushes (OR=1.62, 95% CI: 1.11, 2.38) compared to women who reported having such people in their lives, in a model controlling for age, menopausal status, self-rated health, lifestyle score, life satisfaction, occupation, and smoking (Shiwaku et al. 2001). As mentioned in Chapter Four, Dressler's research (Dressler 1991a, 1991b; Dressler, Balieiro and Dos Santos 1997, 1999; Dressler et al. 1986; Dressler, Dos Santos and Viteri 1986; Dressler and Bindon 2000) has found in several populations that the presence of culturally meaningful social resources is associated with indicators of better health, especially lower blood pressure. The connection between Dressler's findings and those of the present study is particularly notable since recent research has indicated that hot flushes are associated with higher blood pressure. One study found that hot flushes were associated with higher ambulatory systolic blood pressure, independent of menopausal status, age, race/ethnicity, body mass index (n=154) (Gerber et al. 2007). A larger study (n= 5523) found that hot flushes were associated with increased risk of hypertension (defined as  $\geq 140$  mm Hg, and/or a diastolic blood pressure  $\geq 90$  mm Hg, and/or the usage of  $\geq 1$  antihypertensive drug) independent of smoking, education, physical activity, and hormone use as well as higher systolic blood pressure (independent of smoking, education, physical activity, BMI, and hormone use) and higher

diastolic blood pressure (independent of smoking, education, physical activity, and hormone use) (Gast et al. 2008).

It is also possible that aspects of acculturation itself are more directly related to hot flushes. The one study which used a single methodology to assess and compare menopause symptomatology in white British women, British Asian women, and women in South Asia found that the women in South Asia (living in Delhi) were least likely to report hot flushes and the British Asian women living in Birmingham were most likely to report hot flushes (Gupta, Sturdee, and Hunter 2006). Less acculturated women in the present study might thus be more like the Delhi-based South Asian women and more acculturated women might be more like the white British women. However, the more acculturated women are likely to have been facing additional acculturation-related stresses since the level of acculturation was relatively low even among those women who were more acculturated. The range of responses was from 'More Biculturally identified' to 'Highly Asian identified' and did not include the other end of the scale: 'Western identified'.

This suggestion fits with previous research which has linked health-related physiological outcomes to measures of this kind of culture change (Henry and Cassel 1969; McGarvey and Baker 1979; Lee, Sobal, and Frogillo 2000; Reed et al. 1982; Marmot and Syme 1976; Palinkas and Pickwell 1995). McDade (2002) has argued that culture change may disrupt previously more coherent social identities causing ambiguity and tension resulting in psychosocial stress which may have clear somatic impacts. Changes toward being bicultural may cause tensions between identities and sets of norms by putting women in a more ambiguous position with regard to the boundaries that exist between British Pakistanis in Bradford and the wider population (mostly white British) and this may underlie the differences in the experience of menopause for this set of women. One woman said in her interview, contrasting herself with her parents, "because we're born here, we understand the kind of issues that we go through, like sometimes I do feel that we have, like, Pakistani hearts and, uh, British brains or vice versa." Over the course of the interview, she talked about the difficulties that having what she called "modern, western ideas" had created for her throughout life because these ideas conflicted with her religion and caused conflicts between her and both her husband and her parents, though she did not consider herself to be "very modern or very western."

However, a second publication from the Birmingham study comparing British Asian, Delhi women, and white British women found that more acculturated British Asian women reported having experienced fewer vasomotor symptoms (Hunter et al. 2009). The measure of acculturation used was of the authors' own design and was based on answers to the question: "How westernized do you think you have become since you have come to the UK?" along with answers to an undisclosed set of questions about "dress, diet, language, religious practice, attitudes, beliefs, values and lifestyle" (2009:28). The relationship between acculturation and the number of vasomotor symptoms reported was not tested for confounding of menopause status or BMI, likely because the sample was too small for such analyses (n=51). It is possible that different aspects of acculturation influence hot flush severity than influence the number of vasomotor symptoms experienced or that this measure of acculturation captures a different underlying construct to the SL-ASIA Total Score.

The lack of independence of education in predicting hot flush experience fits with the idea of tensions around acculturation and boundaries since many British Pakistanis consider it traditional and Islamic not to educate women so acculturation might influence educational attainment. Shaw's (1988) ethnography of British Pakistanis begins with the story of a young British Pakistani man and his family reversing a previous decision for the young man to train as a social worker because it would benefit both the family and *biradari* more if he continued to work in the family's shop. Several researchers have found that families sometimes perceive a tension between the advantages and the risks of education for young women in terms of family status and reputation (Saifullah Khan 1977; Mirza 1989; Ahmad 2001; Dale et al. 2002). Macey (1999a; 1999b) found that British Pakistani females continuing in education often attract gossip and harassment from other British Pakistanis, particularly males. Indeed, one of the most educated women I interviewed talked about the fact that her paternal uncles had tried to pressure her father continually before and during the time she was at university not to allow her to become so educated because she would become too independent and bring shame on the whole family by trying to choose her own spouse. Her father begged her not to become independent and never to prove them right by developing an interest in any boy or resisting his choice of her marriage partner. She said in her interview, "they would tell my father...if she's going to get more education then things will be harder for you...my father said to me 'look, you know everything what people are saying so my respect is in your hands now. You have to keep it or lose it.' "



Trends in the quantitative data support these ideas. The majority of 'highly Asian identified' women had no schooling (53.8%, n=78), whereas the majority of more biculturally identified women had received 11 or more years of schooling (61.0%, n=25) (SL-ASIA Total Score and Education Level: Pearson  $\chi^2=69.960$ ,  $p<0.001$ ). The values for moderately Asian-identified women were intermediate as one would expect (appx. 20-30% in each educational achievement category). Similarly, the majority of *Choudhary Jatt* women in this sample had not received any formal education (63%, n=46), whereas the majority of non-*Jatts* had some formal education (71%, n=126) and most non-*Jatts* had more than 5 years of schooling (55%, n=97) (*Choudhary Jatt Biradari* and Education Level: Pearson  $\chi^2=42.423$ ,  $p<0.001$ ).

The results regarding ladder status and social class may be related to social support in the same way as described in Chapter Four. Women who have high status jobs and women who place themselves higher on the status ladder may receive less social support than women with lower social class occupations or who rank themselves lower on the ladder. However, the perceived social status measure only approached significance when *biradari* and social class were controlled for in the model.

The finding of this study that higher status women (either in terms of self-perception or occupational social class) were more likely to have experienced hot flushes than women of lower status concords with a study done in Karachi which found that middle class women were more likely to report hot flushes than slum dwellers (Wasti et al. 1993). However, along with the relationship found between educational attainment and hot flush experience in the present study, these findings are in the opposite direction to those of most studies that have looked at socio-economic indicators and menopausal symptoms. Most previous studies found that more educated, more financially secure, or higher social class women were less likely to experience menopausal symptoms (Sierra et al. 2005; Sievert and Espinosa-Hernandez 2003; Dennerstein et al. 2000; Sievert, Obermeyer, and Price 2006; Avis et al. 2001; Obermeyer et al. 2002; Gold et al. 2000; Avis, Crawford, and McKinlay 1997; Kuh, Wadsworth, and Hardy 1997; Wilbur et al. 1998; Dennerstein et al. 1993; Schwingl, Hulka, and Harlow 1994), particularly hot flushes (Dennerstein et al. 2000; Avis et al. 2001; Sievert and Espinosa-Hernandez 2003; Gold et al. 2000; Avis, Crawford, and McKinlay 1997; Kuh, Wadsworth, and Hardy 1997; Wilbur et al. 1998; Dennerstein et al. 1993; Schwingl, Hulka, and Harlow 1994).

It is interesting that the measures of status in this study (participant's own occupational social class and ladder status) are not significantly associated with one another (Pearson  $\chi^2=11.769$ ,  $p=0.227$ ) but that inclusion of the two in the same model causes ladder status to lose significance as a predictor of hot flushes. It is possible that the two relationships are operating via the same pathway though the criteria for (self)designation as high status are clearly different. The difference in findings between this chapter and Chapter Four regarding social class (that chapter found no significant association between social class and timing of menopause) may be explainable by the fact that these analyses were more highly powered than those in Chapter Four (which used a sub-sample of 95 women, whereas for hot flush experience the sample was 257 women). Similarly, the lack of a significant relationship between ladder status and severity may be related to the reduced power of that sub-set of analyses in this chapter ( $n=95$ ). Additionally, the fact that the categories had to be collapsed to create a dichotomous variable to be entered into the model may have meant ladder status was too crude a measure in this case.

Acculturation is a contested concept and both its use and its measure via scales such as SL-ASIA Scale have been questioned (Salant and Lauderdale 2003; Hunt, Scheider, and Comer 2004). However, the advantages of the SL-ASIA are in its relative complexity compared with other scales, its separation of acculturation into three variables with different meanings, and that it is a validated index (Suinn, Ahuna, and Khoo 1992). Furthermore, used along with a qualitative ethnographic approach, the shortcomings of such a quantitative measure can be overcome. Acculturation as measured by the SL-ASIA total score includes many areas in which behaviours and attitudes may change including linguistic preference and use, social relationships (childhood friends, current friends), and cultural activities (music, movies, food).

Based on a comparison of response frequencies, the two acculturation groups (Highly Asian identified and Less Asian identified) appear to differ most in their responses to questions about spoken language and literacy, in which country they were raised, the type of food they preferred to eat, the ethnic origin of friends throughout life, and how 'Bicultural' or 'Asian' they perceived themselves to be. Based on this information, the reason for the association of less acculturation with greater severity of hot flushes could be related to lifestyle differences (indicated by greater preference for Asian food), ability or experience in engaging with the wider society, including health professionals (indicated by lower percentage with English language skills and higher percentage with no ability to read or write in any language as well

as overwhelming majority with almost no non-Pakistani ethnic origin friends in childhood, adolescence, or adulthood and a majority responding that this is preferred), or some other factor related to self-perception of level of acculturation. It is possible that the relationship between hot flushes and acculturation is related to differences in dietary phytoestrogen intake between more and less acculturated women influencing their hot flush experience. Phytoestrogen content of women's diets was not measured in this study but a study of British Bangladeshi women which looks into this is currently underway in London (Sharmeen, personal communication). However, three recent systematic reviews of studies on the effect of dietary phytoestrogens on hot flush experience have concluded that there is little evidence that phytoestrogens are effective in alleviating vasomotor symptoms (Lethaby et al. 2007; Krebs et al. 2004; Nelson et al. 2006).

Timing of migration was not significantly associated with either outcome. Post-migration factors (such as acculturation) turned out to be important in predicting severity of hot flushes though timing of migration itself was not associated with either hot flushes or severity of hot flushes. While later life appears to be more important in determining women's hot flush experience, early environment may not be an influence on hot flushes. Indeed, the post-migration factors appear more to be related to later life lifestyle and social life than migration per se.

In the present study, oral contraceptive (OC) use was not associated with hot flush experience or severity. This differs from the finding of the single previous study, a longitudinal US study, which found associations between OC use and both likelihood of experiencing hot flushes and their severity (Ford et al.2005). This may be because so few women used OC for an extended period (out of the 82 women in this 255 woman sample, only 39 had used OC for more than one year), making an increasing effect over time (like that seen in Ford et al.2005) undetectable.

None of the measures of adiposity were found to be associated with hot flush severity or experience. The error introduced by the fact that the measures of adiposity were collected at interview, whereas hot flushes may have been experienced in the past, may have made an effect undetectable. However, as noted in Chapter One, the results of previous studies have been highly inconsistent, and it is not clear why this should be so. The suggestion in Chapter One that adiposity in some populations is a proxy for other exposures that influence symptom experience, may still account for variation in results of studies, including the present one.

Neither tobacco use nor exposure to second-hand smoke was associated with hot flush experience or severity, which runs counter to the majority of studies that have tested for such an association (Dennerstein et al. 2000; Gallicchio et al. 2005; Sievert, Obermeyer, and Price 2006; Ford et al. 2005; Whiteman et al. 2003). As in Chapter Four, this may be attributable to the low frequency of use of tobacco among women in this population. Indeed, the prevalence of a history of smoking in this study was similar to that in the previous study which did not find an association between smoking and symptom experience (Shiwaku et al. 2001). In both cases, the prevalence was less than 10%. The results also fail to support the hypotheses that exposure to tobacco smoke in the home would influence hot flush experience and severity. As suggested in Chapter Four, this exposure may not be comparable to being a smoker in terms of its effects on hot flushes and/or women may not be exposed to the tobacco smoke within their homes to a degree that would affect their likelihood of experiencing hot flushes or the severity of their hot flushes.

The lack of an association between hot flush experience and physical activity concurs with the results of a randomised controlled trial (Wilbur et al. 2005) but differs from most studies which have looked at this as an influence on hot flushes (Lindh-Åstrand et al. 2004; Guthrie et al. 2005; Hammar, Berg, and Lindgren 1990; Sternfeld, Quesenberry, Husson 1999; Gold et al. 2000; Sievert, Obermeyer, and Price 2006; Ivarsson, Spetz and Hammar 1997). Most of the studies that found an association were cross-sectional and the two studies that had an experimental design found conflicting results (Wilbur et al. 2005; Lindh-Åstrand et al. 2004). Thus, it is possible that the associations found in other research may be confounded by the determinants of physical activity behaviour. Additionally, the temporal problem mentioned above in relation to measures of physical activity, adiposity, anxiety, and depression applies here as well. A measure of current experience of hot flushes would have been more useful in this case.

### **Conclusion**

In contrast to other studies, this study has found that high status women were more likely to have experienced hot flushes than lower status women. Additionally, British Pakistani women from the *Choudhary Jatt biradari* were less likely to have experienced hot flushes than women from other *biradaris*. It has also found that hot flushes experienced were less likely to be severe among British Pakistani women who were less anxious or who were less

acculturated. These results point to the importance of social circumstances in understanding variation in hot flush experience and severity.

## CHAPTER SEVEN: MENOPAUSE, REPRODUCTION, AND MEANING

This chapter provides a contextualised view of the way women understand and talk about menopause based on the qualitative data I collected during my fieldwork, including responses from, and conversations during, the questionnaire-based interviews, the life history interviews, and also what I was able to learn about the topic (and the topics related to it) from participant observation and informal conversations. In this chapter, I begin by talking about how British Pakistani women learn about menstruation and reproduction. Then, I consider the ‘polluting’<sup>17</sup> aspects of these phenomena and propose an explanation of why they are considered polluting that is particular to the British Pakistani context. I also discuss the connection between perceptions of menstruation and reproduction and particular Islamic beliefs and Pakistani conceptions of the body. Finally, I explain women’s ideas about menopause and post-menopausal life against this backdrop.

### **Reproduction, Social Hierarchies and Sharing of Information**

One major influence on women’s experiences of reproductive function, maturation, and ageing was found to be the way that information is shared among Pakistanis, particularly information which is considered sensitive. Information-sharing throughout life is closely linked to social hierarchies, both within families and among friends. The importance of these hierarchies within the family has been written about by many anthropologists as reviewed in Chapter Two. One’s elders are almost always considered to be one’s superiors, although there are sometimes exceptions: in the British context this may include non-Muslims, while, in Pakistan, this often includes non-Muslims and servants. Elders are generally addressed and spoken about carefully. One is careful to call her/his elders by kin terms indicating elder status rather than by first names alone (if first names are used at all). One calls elders who are not kin *bhaji/bhai jaan* (older sister, dear elder brother), if they are at all older. However, if the difference in age exceeds that generally found between siblings, elders are called uncle/auntie (or sometimes by the more specific kin terms such as *chacha/chachou/chachi* [otherwise used for one’s father’s younger brother and his wife]). I often found it difficult to

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<sup>17</sup> Pollution here does not refer to environmental contaminants but rather to a state of personal defilement as in Douglas (1966).

determine whether it was best to refer to a woman who was my elder as *bhaji* or auntie since they were certainly old enough to be my aunt but might not have enjoyed being reminded of this fact. On some occasions I offended women who were much older than me but who did not want me to call them auntie because it made them feel old. In contrast, those who are younger, and therefore below you in the hierarchy, can be called by their first names in any context, but sometimes kin terms are used to show affection to younger people especially *putar* or *beta* (both terms for son/daughter).

These hierarchies are important for understanding how information is or is not passed from person to person. Elders hold and control information and therefore feel they can make better decisions on behalf of those younger than themselves (as in the case of arranging marriages). I have found that among Pakistanis such control of information is not simply considered to be a cynical calculation on the part of the elder. Rather, information is considered to affect people in undesirable ways. The Pakistanis I spoke with contrasted 'simple' people with 'clever' people. It was considered far better to be a 'simple' person, particularly for a woman. Simpleness is a quality which relates to a lack of knowledge, and, crucially, interest about worldly or impure things, lack of education, purity of thought, and humility. This is contrasted with cleverness, which is associated with selfishness and independence (especially with regard to manoeuvring in family politics) as well as knowledge of, and interest in, worldly and impure things. The contrast between 'simple' and 'clever' is considered particularly important in the case of knowledge about reproduction and sex. Women often talked about their youth as having been 'simple' and contrasted their youthful selves with the 'clever' young people they see today. One woman in her 60s said, "Now is a children is very clever, before, mother says 'sit down', everybody sit down, no, like, uh, but now is a children talking so much, never listen for mother." Another woman pointed out that, in contrast to the present, when she was young, there was no problem with boys and girls playing together because children didn't 'know' anything at that point; whereas gender segregation is important now. An older woman talked about her lack of knowledge about and the resultant fear of what was happening to her at menarche with an apparent sense of pride before shaking her head and lamenting that "now, the people, they know everything."

Women most often said they learned about menopause from sisters-in-law who were a little bit older, or from their friends. This is because information flows most easily between equals (or relative equals) though shyness (associated with simpleness and modesty) inhibits this as well. British Pakistanis are reluctant to share sensitive information with elders unless it is an

emergency because of shame or fear. The reluctance of a younger person to share information with an elder is considered a sign of respect. One older man in Keighley shared with me a story about a time he caught an adolescent boy he knew smoking. Since among Pakistanis, one is expected to hide smoking from one's elders, the young man quickly shoved the lit cigarette in his pocket to hide it when he saw the older man coming around the corner. The older man asked him, 'are you smoking?' The young man, looking frightened, said 'no, uncle' and bore the pain of a burning cigarette against his leg, with as normal an expression as he could, while the older man pressed him to admit that he had been smoking. Finally, the older man laughed and walked away. This story was recounted to me with the older man smiling, proud that the young man had respected and feared him enough to lie (and suffer physical pain to keep up that lie) even when it was obvious that he had been caught.

### **Experiences of Menarche and Menstruation**

Many women recounted difficult, embarrassing, and even frightening experiences of menarche and early menstruation because of the secrecy that surrounds menstruation and reproduction. Most women said that they had never been told about menstruation before they reached menarche; few women learned about it from their mothers, some learned from aunts, others from sisters, and still others from friends. Nasreen, a 65 year old woman, told a story which was typical:

I didn't tell, you know, anybody and I went to school and I don't know anything about the period, you know, and I've got temperature, my cheek was red and [pause] I didn't say anybody, I don't know what is it, where is this come from?...I was scared, that's why I've got temperature...My God, who to tell, 'cause that time my mother was dead, you know, I don't have a mother, one my [elder] sister, I didn't tell her, I say maybe she's going to [be] cross [with] me, you know, 'what have you done? What is this?' I thought this is only for me, not anybody else, and in school time they don't tell you, you know, in the school, that time. So, when I changed my [laughs] knicker and *shalwaar*<sup>18</sup> and my sister, she see, you know, that, say 'oh, you've got period' and I say [imitating crying] 'I don't know what's wrong! I don't know! I don't know anything! I don't have any that, you know, lump anywhere, I don't know where is this coming from' and she say 'it's ok, keep quiet, don't tell anybody' and she told me...she says its happen, you know, and 'don't tell anybody' ...and she give me pad.

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<sup>18</sup> The bottom portion of the traditional clothing for men and women in Pakistan, like very baggy trousers



Several women said that they were not allowed to go outside or to play with other children while they were menstruating and one woman said that her periods (which were very heavy from the time she was aged 11 and came twice each month) had ruined her whole life and she had never been able to make friends after menarche.

Some women who had been raised in the UK learned about menstruation in school but when it happened to them, they still had a difficult time because of the reactions of their family members and the issue of secrecy. Shahnaz, a woman in her early 40s who was born in Bradford, said that her menarche at age 10 and her early experiences of menstruating were “a really big burden, a really big burden... it just used to take over my life” particularly because she was told by her mother, “make sure your brother doesn’t find out.” This meant when she had painful menstrual cramps, she had to hide them and was not allowed to ask aloud, ‘where are the paracetamols?’

Another British-born woman, Rukhsana, said that when she told her mother that she had her first menstrual period,

[She] started to cry, so I, I, really felt, I, you know, I had a guilt, I’ve always had a guilt feeling and I’ve made sure that I don’t actually do that to my daughters ‘cause I thought it was really terrible and I felt, uh, you know quite hurt [pause] at that time as well, ‘gosh, you know, why is she crying? What have I done?’ ...I remember somebody saying to me once, ‘oh, I’d rather my daughter had a period than not have a period ‘cause it’s a sign of being normal’, you know, and [my mother] wasn’t a particularly very educated woman and I thought, you know, what was the point? You know, she didn’t just cry, she cried in a really bad way and, you know, she were like, you know, I do feel terrible really.....Really, even today, when I think about it, I think, God, I think, I really feel terrible about it.

Rukhsana also described struggling with her periods in her teens when she was living in Pakistan:

I even remember, you know, about 16-17 year old trying to, ‘cause, right, in Pakistan you struggle with things, you know, my, you know, and I think its your pare-, your mother’s duty, ‘cause, like, in Pakistan, you know, girls, don’t go out to buy their stuff. Even here, I make sure that my girls have everything.... you know, supermarket, ok, maybe, but sanitary towel, creams<sup>19</sup>, and I, nobody bought us anything, and I do feel, I

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<sup>19</sup> Meaning depilatory creams. Pakistani Muslim women remove all pubic and underarm hair because of the Islamic requirement to do so but also frequently remove all arm and leg hair as well. They understand the

really do feel, and now if I asked her, I mean, we don't talk about these things but if I'd asked her, she, I don't think she even remembers [pause] that this was her duty as a mother...

Naseem, a woman in her 40s who was raised in Pakistan, described menarche and early experiences of menstruation and recounted difficulties:

there wasn't any pads or anything, you have to go and look for the old sheets, old towel or any, that was horrible, compared to now, it was very horrible and then the way you have to throw that or wash it and maybe dry it, oh, Mwenza, it was horrible...Bless my mum, she was very simple, she didn't, she, she, she didn't, I mean properly show us maybe how to do this, how to look after when it's started....but when we goes to school, it's so difficult to find what to put it....once, I was in school, I think, and the school uniform was white, the school uniform was white, the college uniform was definitely full white, and I don't remember if it was school or college, so once I was in school or college and it's gone through my clothes, and then short *kameez*<sup>20</sup> [was] a fashion, so it was showing from my, you know, the *shalwaar*, my bottom, and someone told me and I thought 'Oh my God, what I am going to do, what I am going to do? My God'...it was only, only for the female college or school but there was ...few men, canteen person, it was not totally female, there is 8 to 10 people...and all the guard people is on the gate, that's very horrible and there wasn't any system to take any extra [menstrual supplies] with you....those days was so horrible.

Women thought of menstruation generally as a difficult time, one woman, Parveen, described it this way:

so it's like, be more gentle with her, because she's obviously, kind of, you know, got, got something to cope with there, so I think there was that tradition there, you know, that people expected you to be grumpy and, sort of, not on top form, um, but, actually, it was very much kept away from the whole family in terms of men.

### **Pollution and the Margins of the Body**

This sense of menstruation as something which is difficult to deal with continues through life and is related in some ways to what women understand to be Islamic views of menstruation. It was clear that almost all women I spoke with believed that menstruation made one 'dirty',

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requirement to be for hygiene reasons and women refer to the hair as 'dirty'. In the UK, this is often done using depilatory creams.

<sup>20</sup> The top portion of the traditional clothing for men and women in Pakistan, like a long shirt

or polluted, and that fasting, prayer, and touching the Quran were strictly forbidden during the time one is menstruating for that reason. The one woman with whom I spoke who dissented from this view agreed that this was the most common belief among Pakistani Muslim women, but said that she thought this was a misinterpretation of the Quran. The idea of menstrual blood being a source of pollution also accords with the idea that blood is considered 'hot' in *unani-tibb*, a Greco-Arab conception of health and the body which is common among South Asian Muslims, and these 'hot' substances can be polluting as discussed in Chapter Two.

Some women also believed that they were more vulnerable physically during their periods and several people told me that it is unsafe to swim, shower, or bathe during menstruation because water can get inside the body and cause illness. One woman explained that, because she had swum too much in her youth during her periods, she had water inside of her, which had stopped her periods from being regular all her life. This is related to the purported 'cold' properties of water. This belief also indicates that the vagina, a 'margin' of the body according to Douglas (1966), is considered vulnerable by British Pakistanis. Douglas (1966) argues in *Purity and Danger* that, within a given society, the human body symbolically represents the society itself and that the body's orifices, the margins of the body, represent the margins of society, and are vulnerable, as are the margins of any structure. Among British Pakistanis, the margin considered most vulnerable is the vagina which is also highly subject to pollution and other moral dangers. Douglas makes the point that pollution ideas for a group are closely related to the things which are considered a threat to the social order. Douglas states, "To understand bodily pollution we should try to argue back from the known dangers of society to the known selection of bodily themes and try to recognize what appositeness is there" (1966: 150).

### **Secrecy and Modesty**

Some families went to great lengths to avoid talking openly with males about menstruation. Ghazala migrated to the UK with her family as a child and when she had her first menstrual period she was living in Bradford with her father while her mother was in Pakistan. She awoke one morning in a bed stained by menstrual blood and told her father that the cut she had on her leg must have bled a lot during the night. He agreed silently with this explanation. That day after school, Ghazala was performing *wuzu* (ritual ablutions) to prepare for her

lessons in Quranic recitation and the woman who was teaching her Quran saw the menstrual blood on her clothes and told her 'go home now, don't touch Quran, just go home and don't come back for a few days'. She arrived at home and told her father what had happened and, again, he did not explain but, instead, he quickly arranged to send her back to Pakistan with a letter he told her to give to her mother. The letter explained her sudden and unexpected return by saying 'something has happened which I cannot tell you in this letter' which scared her mother quite badly. Ghazala's mother asked her what had happened but she didn't know and so Ghazala's mother asked Ghazala's elder sisters who had been staying with her in Pakistan, 'what do you think could have happened?' They had no idea either. Every day Ghazala's mother examined Ghazala carefully to try to figure out what was wrong. She was especially worried because Ghazala had stayed in the home of an English family for some of the time she had been in Britain which Ghazala's mother felt meant any number of terrible things could have happened to her. Meanwhile Ghazala's periods had stopped and did not come back for several months, as often happens after menarche. When Ghazala's father arrived in Pakistan a few weeks later, Ghazala's mother finally forced him to explain what had happened, causing an argument between them.

The religious restrictions relating to menstruation, coupled with the idea that it should be hidden as much as possible, particularly from men, create certain problems for women. During Ramadan, I found that women often pretended to fast in front of male family members in order to hide the fact that they were menstruating. This meant getting up at 4:00am with the rest of the family, and hiding while eating. Parveen talked about several incidents over the years when she or her sister pretended to fast or pray in order to avoid their father and brothers knowing they were menstruating although, she explained, she and her daughters no longer do this:

[it was] to that extent that you actually do everything that you would normally have done, whereas, now my daughters if they're not fasting, stay in bed....[My son] kind of realizes, you know, that the girls are, uh, you know, but it is kind of hidden...things are changing, uh, I mean, it's, uh, obviously with my daughters, uh, their father and brother know that they're not, you know, they're on their period and that's why they're not fasting and they don't make a big deal but, in fact, my, my husband [who does not fast for medical reasons] sometimes will make a sandwich in the morning and will make one for them if he knows [laughs] they're not fasting, so it's kind of implicitly recognized and my mum feels, you know, thinks it so funny that he [laughs] does that, but you know, there's nothing religiously sort of saying that you have to pretend that, you know, don't happen, they are a natural part of a woman's life, so I think it's

probably a more healthy way of [laughs] of looking at it, but, at the same time, I don't really want them to talk blatantly about things, you know, because I think there is something about modesty really.

The tendency not to talk openly about menstruation and reproduction had some effect on how the research was introduced to women when we met women outside of community settings restricted only to women. The interpreter would generally refuse to say what the interview was 'about'. My suggestion was that 'health' was possibly an appropriate description; I didn't think it was as sensitive as alternative terms like menopause<sup>21</sup>. One interpreter used to whisper 'periods' as an answer to what the study was 'about', if there were men or children in the house (even if they were upstairs or beyond a closed door) and sometimes even when there was no one else around. Shaw (2000b) also notes this reluctance to refer directly to menstruation, especially to use the Urdu word for menstruation, *mahwari*, even when only in the company of other women.

In talking about the tendency to avoid discussing menstruation openly, some women explained that it was just like other sensitive subjects which are generally not openly spoken about or acknowledged, particularly sex and pregnancy. Shahnaz talked about how she first learned about sex and why she felt it was a dirty thing:

we had the lesson about how you come to having a baby and, um, and it was, it was in science or something and I remember just being so shocked at this idea that a man, a husband, and a wife, God forbid it should happen outside ma- [laughs] a husband and a wife, would have to get naked in front of one another ... and I remember saying to my friend ... who was an Asian, a Pakistani girl, at the time, I think she was, must have been, one of the only Pakistani girls at the time, um [whispering] 'that's what, that's what *gore*<sup>22</sup> do though, isn't it? Uh, we, we don't do that 'cause we're like-, ' it wasn't even a Muslim thing, it was 'we're Pakistanis, we don't do that' ... and then I remember 'cause there was no, you couldn't google, at the time, and I remember sort of feeling quite helpless and thinking who can I go and ask 'is this how everybody has babies?' or, and I just, I kept, I remember saying to [my friend] 'no, no, we must take some sort of a pill or something 'cause I remember in Pakistan people used to say, um, you know, um, I must have overheard some talk of pills, you know *golian*, *golian leniya*<sup>23</sup> or, um, um, I knew people used to say 'God hasn't given her any children, or

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<sup>21</sup> There appears to be no word for menopause in any of the South Asian languages spoken by Pakistanis. When not using the English term, people refer to menopause using phrases which translate as 'periods are closed' (*mahwari bundh ho gay*) or 'periods are finished' (menses *khatam*).

<sup>22</sup> Translation: white people

<sup>23</sup> Translation: pills, taking pills

‘God has given you’ so, so I remember it was sort of a Godly thing, um, but it didn’t compute at all. I don’t know how old I was when I finally realized ‘no, that is how everybody does it’, but I was just so naïve to that extent, um, and probably actually quite uninterested besides just this, it wasn’t even curiosity it was more just, um [pause] ‘is that how we do it as well?’ and feeling quite disgusted actually ‘cause I remember in our fam- um, well, it [pause] but I, like, remember, like, when, when, if my mum was giving me a bath when I was a little bit younger or something, just this idea that it was all dirty, all that private stuff was just kind of dirty and those body parts were dirty, I remember that.

Shahnaz’s immediate initial feeling of disgust made her suspicious of the information provided in the school context, and fit with common discourses among Pakistanis in Bradford to the effect that white people do ‘dirty’ things whereas Pakistanis do not <sup>24</sup>. Indeed a key feature of Pakistani identity is the association with purity. This is apparent in the name that was adopted for the new country, since in Urdu, the national language, Pakistan literally means ‘Land [of the] Pure’.

Shahnaz’s reaction was a result of two factors: first, the secrecy around sex meant that no Pakistani person had ever explained this to her, certainly not her mother; and secondly, that fact that her mother had consciously or unconsciously taught her to regard her genitals as dirty. Shaw notes in her ethnography of British Pakistanis in Oxford that young brides conceal “the shameful fact” of their sexual experience (2000b: 213). Indeed, among Pakistanis, sexual intercourse is considered to be polluting, as is menstruation, and to restore ritual purity a *ghusl*, or ritual bath, is required immediately after sexual intercourse (for both parties) and once one has finished menstrual bleeding. In fact, as Shaw also notes, for a wife to have washed her hair early in the morning (before the first prayer of the day) effectively signals the shameful fact of recent sexual intercourse to anyone who notices that she has done so, especially her mother-in-law. This, coupled with the fact that a married couple often have to slip away furtively after other family members are asleep in order to have sex, may make having sexual intercourse more unattractive for wives in joint families. Pollution as a result of sex is related to the social danger inherent in sexual behaviour, since sex can threaten the group boundaries, as I will discuss below.

Parveen draws a connection between the avoidance of open communication about menarche with a similar tendency around pregnancy and explains the context of this:

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<sup>24</sup> This in itself is a kind of inversion of the discourses about Asians being dirty people which were around especially in the period when Britain was first being settled by Pakistanis

I suppose when it came to things like pregnancy it was similar, you know, that my, it wasn't a kind of thing that my mum would expect me to talk to her about. Even when I became pregnant the first time I didn't feel it was appropriate to then say to her 'I'm pregnant'. I, you know, I expected her to kind of realise as time went on and to accept it and, um, and so she, uh, she's, she got my sister-in-law when I, when I did become pregnant, she got my sister-in-law to say something to me ....[she] got my sister-in-law to ask me, and she said, you know, 'why didn't you tell her?' and I said 'well, you just, you know, I just couldn't and I don't know, I couldn't kind of have that kind of conversation just straight up, just go up and say it to them'...It's a very cultural thing, it's not Islamic thing, you know....I think the reason that it's become a cultural kind of taboo to talk about in front of male relatives is because, you know, its obvious that the pregnancy has happened because you've [laughs] had a sexual relationship, you know.....but that's, that might be the train of thought...and my mum used to tell us that, um, it was even more kind of pronounced in her generation that if they'd had children, the men wouldn't even pick the child up if their father was in the room, you know, that they would, uh, she told me about her, um, brother-in-law, that he was holding the baby once and his dad came in the room and he threw the baby onto the bed, you know, he was so embarrassed to have the baby.....now, for example, you might talk about pregnancy in a mixed setting, you know, in the family in a way that previously in our generation, previously, that you wouldn't necessarily talk about it ....It's not Islamic, really, I mean, I think people relate it to modesty but there's nothing really in Islam [pause] um, you know at some level you can see that there is there is, uh, kind of an aspect of modesty that you could respect within that but then it can go too far I think....people used to be far more, um, you know people used to be far more sensitive to it than they are now.....for example, if somebody within the room was pregnant, people wouldn't talk about her pregnancy openly, within my family anyway, I don't know what it's like in other families, um, but we might talk about somebody, you know, being pregnant, somebody else [laughs].

The shyness and desire to hide something considered dirty, in this case, sex, thus extended not only to the result of sex, pregnancy, but, in the past, extended to also to the infant. These tendencies were common as well as persistent. For example, it is clear that, while Parveen's mother wanted to scold her for not being open about her pregnancy, in a way, she also felt she couldn't speak to her directly and openly about it and, instead, sent someone who was a near-equal to Parveen, her sister-in-law, to pass on a message. Parveen, herself, struggles to determine to what extent she should continue traditional practices and ideas. Part of the process for her is to sort out what is and is not Islamic in nature, since she is a practicing Muslim whose sincere and conservative approach to her faith might be described as

fundamentalist<sup>25</sup>. In this case, as in the case of menstruation, Parveen relates the traditional avoidance of openness to the importance of modesty in Islam. The idea that pregnancy is a product of something which is polluting is also paralleled in the idea that pregnancy is ‘hot’ as a result of the fact that sexual intercourse is ‘hot’ as mentioned in Chapter Two.

Avoidance of openness is generally believed a key part of morality among British Pakistanis. The belief in pollution, secrecy, and shame all work toward the same aim: securing the morality of one’s younger family members by control of information and behaviour. Douglas (1966) outlines four types of social pollution:

1. pollution representing danger pressing on external boundaries
2. pollution representing danger from transgressing the internal lines
3. pollution representing danger in the margins of the lines
4. pollution representing danger from internal contradiction

I suggest that, of these, the type which describes this case is pollution which represents “danger pressing on external boundaries” (1966: 152). The boundary concerned is that between British Pakistanis and other groups in Britain, particularly white British people. Maintenance of this external boundary is a major concern for many British Pakistanis elders. As mentioned in Chapter Two, following the Rushdie Affair, the public disturbance in 1995 in Bradford, the Bradford Riots of 2001, the attack on the Twin Towers in 2001, the attack on London in 2005, and the wars in Iraq and Afghanistan, British Pakistanis in Leeds and Bradford under threat from the wider British society. Britain is seen by many British Pakistanis as racist, Islamophobic, and morally faltering. Moreover, it has been the modesty of Muslim women (events/debates about *hijab*, *niqaab*<sup>26</sup>, and *jilbaab*<sup>27</sup>) and the control of women’s sexuality by elders (debates about and legal action against arranged marriage and forced marriage) which have repeatedly come under direct attack by the wider society. The control by elders that is achieved through the maintenance of shame and secrecy about the sexual and reproductive aspects of the body keeps women in particular within the community. Shahnaz’s statement about her disgust at the idea of sex and her thoughts, “we’re Pakistanis, we don’t do that,” are thus revealing about how Pakistani identity is reproduced in

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<sup>25</sup> I use this term to refer to those who wish to return to what they consider to be the fundamentals of Islam and who reject liberal Islamic movements, secular influences, and the Sufi tradition. I maintain a clear distinction between Islamic fundamentalism and either Islamism or extremism.

<sup>26</sup> An item of clothing covering the face.

<sup>27</sup> A long, loose cloak covering the body from the neck to the feet.



British Pakistanis, the relationship of this identity to the wider British community, and how these are related to sex and pollution. Shaw has drawn similar connections based on her ethnographic work, arguing that modesty and belief in pollution effect “control of female and to a lesser extent male sexual behavior” (2000b: 213).

As Yuval-Davis and Anthias (1989) points out, it is generally women’s behaviour which signifies the boundary between in-group and out-group. Control of women’s sexuality ensures that children born to them are both biologically and symbolically members of the group. Women explained to me that they believe that, in comparison to men, women are morally weaker and more vulnerable to giving up or deviating from their beliefs. They explained that this is the reason underlying their belief that Muslim women are not allowed to marry non-Muslim men while Muslim men are allowed to marry non-Muslim women.

This boundary between in-group and out-group is reinforced by the extent to which behaviour is policed by other local people via gossip and denial of social support (as mentioned in Chapter One). Those who are seen to be immoral/unclean or who have lost control of their family in these domains (a family member, usually a female family member, is judged immoral/unclean) are denied access to key areas of social life such as the guest/host relationship (as mentioned in Chapters Three and Five). Shaw’s (2000b) observation that illicit sexual relationships involving British Pakistani women have the power to destroy the *biradari* (while those involving men can actually extend the *biradari*) is salient here.

The loss of fear and shame about pollution (pollution from knowledge, menstruation, or sex) in this system would substantially undermine the moral boundary between Pakistani and non-Pakistani. This has an interesting relationship to Douglas’ (1966) theory of social pollution. Douglas asserts that the idea of dirt (from which comes the idea of pollution) comes from the mental activity of dividing and differentiating things from one another, a way of creating order out of a chaotic world. This order also makes identity possible. Regarding British Pakistanis, Douglas’s statement, “where there is no differentiation, there is no defilement” (1966: 198) can be seen to work in reverse. In this instance, the idea of defilement itself becomes crucial in the maintenance of British Pakistanis as a distinct subpopulation in Britain. That is, to remove the possibility of defilement is to remove a key barrier to behaviour which may compromise the distinctness of British Pakistanis with regard to the wider British society. This would also mean that women might not differentiate between sanctioned and un-sanctioned behaviour, including sexual relationships.

## Menopause

It is in this context that British Pakistani women learn about and experience menopause. These accepted norms and experiences influence their experiences and perceptions of menopause and the changes accompanying it. Women's experiences of learning about menopause are not dissimilar to the way in which they learn about other aspects of their reproductive systems, although they are sometimes better placed than they were at menarche to have some advance warning.

Many women did not know about menopause at all. Some only found out during the interview itself that women's menstrual periods naturally stop in mid-life. In line with the desirability of being simple, several women also said that they were not interested in knowing about menopause or the symptoms of menopause. One woman who was 49 at menopause explained that she had no interest in the matter and only went to see her GP about menopause because her friends told her that her periods had stopped too early and that this might cause problems. As discussed in Chapter Five, some women explained their lack of knowledge about menopause by saying they didn't go out very often, meaning that they had little social contact outside their families and thus did not visit other women their own age who would tell them about it. Rukhsana, aged 41, said she first learned about menopause, and the changes associated with it, from workshops in the community centre she had attended. Parveen explained the source of her knowledge about menopause and the reason she did not know more:

What I have learned about the menopause has really been through other women. For example, I had a friend who, um, had hot flushes, um, she's probably about the same age as me and I don't know if it's, I don't know if it's related to the menopause or not but it kind of, um, raised my awareness that this is something [pause] really [pause] I've just sort of picked things up about the menopause, I don't know a great deal about it ... I don't know a great deal about the menopause, I've heard about HRT... I don't know whether it's common for women, um, in my community to have their, uh, whole, to have hysterectomies 'cause my mum's had it done, my sister-in-law's had it done, and now I'm having it done so I suppose that's why it's not, I haven't really learnt a lot about the menopause because it's not been a personal experience of people in my family.... I think my mum would have talked about it with me if she'd had her experience but she never had, you know, she had a hysterectomy"

Women talked about a range of causes for menopause and menopausal symptoms as well as some cures for these, including hormone replacement therapy (HRT). The influence of *unani-tibb* (the Greco-Arab system for understanding of health and the body mentioned in Chapters Two and Five) is also apparent in women's discussions of the influence of 'hot' or 'cold' foods<sup>28</sup> on the reproductive system especially heavy bleeding, which occurs around the time of menopause. Nichter (2003) suggests that practices influenced by hot/cold reasoning are taken up when a person is considered to be in a vulnerable state. Accordingly, Pakistani women understand their reproductive organs, which they perceive as vulnerable (as mentioned above), to be affected by the 'hot' or 'cold' properties of things they eat, drink or, in the case of water, in which they immerse themselves. Foods with 'hot' properties bring on menstrual bleeding and can even trigger a miscarriage where there is a pregnancy, whereas, things which are 'cold' can stop menstrual bleeding. Fatima, a woman in her late 40s, attributed a 4 week long, heavy period she experienced shortly before her interview, something which might have been considered to be perimenopausal menorrhagia from a biomedical point of view, to having eaten a lot of nuts (a 'hot' food) around that time. Naseem, who was experiencing long, heavy menstrual bleeding that she attributed to menopause, told me she was considering eating oranges (a 'cold' food) to stop the bleeding which she found bothersome. One woman interviewed said her periods had stopped for a long time and only came back once when her daughter made her eat garlic (another 'hot' food) because her daughter was worried about her having blood clots in her body. Another woman treated sleeplessness she was experiencing (which she attributed to menopause) by eating almonds (a hot food) which she said cured the problem. Rack (1979), a psychiatrist in Bradford, notes that British Pakistani women "are particularly conscious of menstrual irregularities and attach great importance to them" (173). Rack's observation may explain why women are so conscious of menstrual changes leading up to menopause and are aware of being in the menopausal transition even when they don't have prior knowledge about menopause.

As outlined in Chapter Six, women experienced a wide range of changes that they associated with menopause and the majority of these were considered unpleasant. While some women were prescribed HRT by their GPs to relieve these symptoms, others were not. Some women described arguing with doctors in order to get HRT to try to stop bothersome changes that

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<sup>28</sup> Werbner (1990) discusses this in relation to what she calls a thermodynamic theory of reproduction as explained in Chapter Two

were occurring as part of the menopausal transition. Other women told me that they had been prescribed HRT but had refused to take it or had stopped taking the medication after some time for different reasons. Some women said they were happy that their periods had stopped and found the resumption of periodic (often unpredictable) menstrual bleeding unattractive, since it would pollute them and thus interrupt their prayers and fasting. One woman said she thought that taking HRT was, “fighting with God.” Another woman told me that she had been prescribed HRT and had been taking it until someone told her that the tablets were made of horse urine. She returned to her doctor furious that she had been given something she felt was both disgusting and forbidden to her as a Muslim.

A number of women said that their periods had stopped permanently or had become light or irregular after they went on Hajj (the major pilgrimage) or Umrah (the lesser pilgrimage) because of tablets that are commonly taken when women make these pilgrimages. The tablets are taken before and during the trip to prevent menstruation. Menstruation would be problematic because of the particular emphasis on being pure throughout the journey which is inconsistent with both sexual intercourse and menstruation. No one ever had any to show me during the fieldwork but, from the descriptions that women gave, they seem likely to be hormonal contraceptive tablets taken starting the month before the pilgrimage and continuing until the woman returns home.

Women frequently talked about menopause in hydraulic terms, some women explaining that ‘extra’ blood, ‘dirty’ menstrual blood was flowing heavily as they approached menopause, as a kind of flushing out the last of it, while others said this blood was stuck inside their bodies. A woman in her late 50s told me she had circulation problems and constipation because this ‘dirty blood’ was not being flushed out of her body any more. She explained, “things are not connecting anymore.” Another woman said that her dizzy spells were caused by the ‘bad blood’ inside her body and that everything inside her body was changing because of menopause.

Women also talked about how they felt about approaching menopause or having achieved it. Many premenopausal women talked about a fear of, or desire to, avoid menopause. Fauzia, a woman in her mid-forties, said that she had read about menopause in a magazine when she was a young teenager in Pakistan and the negative things in the article, particularly that menopause caused serious depression, had stayed with her all her life and made her afraid of menopause. She said:

I talk to my sisters and sister-in-law about that but they, in Pakistan, on the phone...you know, accepting your life, I mean, age is very difficult for women so they don't want to come to this time, actually, I think. Even this, I think I am 42 or something, if I will say to somebody, 'maybe this is because of menopause' they will say 'no, it is too early to say it's menopause' so I will be happy by, um, inside, you know. I think as a woman it's hard to accept how you are getting older now...they are not ready to accept that they are getting old...actually, this is, I think, this is the nature of woman, I think.

This sentiment was echoed by several other women. Naseem, when asked what she thought about menopause approaching, said, "I don't want to get old" and seemed a bit upset. She then said, "I think already my hormones changing...something happening already," and described changes in her menstrual patterns and increased aggression and anger which she attributed to hormonal changes related to the menopausal transition.

Rubina, who is in her late forties, described the state of panic that attended the end of her periods. Rubina heard, while growing up in her village in Pakistan, that menopause makes women mean, fat, and ugly, so she felt scared when her periods stopped. Fearing these consequences more than wanting to avoid the pollution of menstruation, she went to her GP desperate for him to give her something to make her periods return to normal. Her doctor did not prescribe anything and told her that he could not make her cycle again; she eventually accepted that menopause is normal and unavoidable.

In the information sessions I ran about menopause, women were especially interested to know that the body does not make more eggs (ova) in postnatal life, that the maximum number of eggs is determined before birth. They interpreted this as a sign that menopause, especially the timing of menopause, is determined by God, which women seemed to find comforting. This is understandably appealing information because it fits the common belief among Pakistanis that 'everything is written' in advance about one's life and that one should submit to God by accepting fate.

The idea of fate came up often, particularly when women talked about health and illness, though some women challenged it, saying that Islam only teaches that the time of one's death is predetermined, not that all things about one's life are already written. A premenopausal woman whom I met at one of the information sessions told me she was eager to reach menopause because she did not want any more children. She then brought up the fact that the number of eggs is fixed in prenatal life (which I had just talked about) and seemed content to

‘leave it with God’ since she interpreted that fact to mean that God not only determines when one gets pregnant (a common belief), but also when one achieves menopause. Women were often clearly somewhat torn between competing fears and desires: first, the fear of ageing (which to them means losing physical attractiveness and social role changes); second, the aversion to polluting menstruation; third, the fear of having too many children; and fourth, the desire to accept their fate including their current menopausal status.

Naseem, who was at the time perimenopausal, explained that, according to her understanding of Islam, long periods of heavy menstrual bleeding around menopause are considered to be like an illness, rather than a normal menstrual period. This way of thinking about such bleeding allows women to get around the restriction against prayer and touching the Quran while menstruating. She told me that if a woman waits ten days and the bleeding has not stopped, she can take a full *ghusl*<sup>29</sup>, put on a clean pad and pray as normal from then on. Naseem and I talked several times about the decision whether to pray or participate in various religious activities when different kinds of vaginal discharge were occurring. She always erred on the side of caution when facing discharge that was pinkish or darkly coloured and refrained from prayer or touching “any holy book.”<sup>30</sup> Other women I interviewed clearly did not use this ten day principle and, instead, stopped all prayer and fasting when they had long, heavy bouts of menstrual bleeding as they approached menopause. For some this meant refraining from prayer for up to a year at a time. In this context, it is clear why some postmenopausal women said they felt clean as a result of no longer having periods.

It seems that this time of life, when the reproductive period has ended, a woman’s body is considered clean and a woman can pray and fast when she chooses, coincides with the time when, often after going on Hajj, some women become more religious. Indeed, after menopause many women spend more of their time in religious activities and engage less with worldly things, some visit Pakistan more often, and leave most of the running of the household to their daughters-in-law. So, while the menopausal transition can be highly polluting for women who experience heavy bleeding, and is disruptive for those who experience long or irregular bouts of bleeding, once menopause is achieved women are generally relieved not to face periodic occasions of impurity. Many choose to take on the signs of simpleness and purity in their lives, demonstrating their choice by wearing solid

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<sup>29</sup> The full ablution, a washing of the whole body with water, required in Islam after polluting activities such as menstruation, sexual intercourse, or giving birth

<sup>30</sup> For many Muslims, the Quran is not the only holy book which is treated with great care and reverence; others include the Bible and the Torah.

white *shalwaar kameez* or other plain, unfashionable clothing. In fact, women sometimes showed open disapproval of middle-aged women who had not made the transition to wearing less fashionable clothing, perceiving this to be age-inappropriate behaviour.

Women mentioned to me that it is commonly believed that menopause marks the end of sexual life. Some women explained that, while a woman herself may not feel this way, her husband may stop engaging in sexual intercourse with her. As one woman in White and Sharma's study said, "Sleep in peace and don't do anything now...what are you laughing at? We don't have to do this all our life. We don't do anything like that anymore" (2000:10). Since even within marriages, open inter-gender conversations about sex appear to be rare, it is difficult for women who would like to continue having sexual relations to argue against the idea that they should remain sexless. Indeed, one woman who experienced an increased libido after menopause felt very unhappy and as though she was sinful for not fitting the idea of the sexless older woman. White and Sharma's (2000) study found that heavy bleeding or constant spotting during the menopause transition had caused an end to sexual activity before the last menstrual period for some women. Thus, the end of the pollution of menstruation is also often related to the end of the pollution of sexual intercourse, resulting in a woman who is no longer considered a threat to social boundaries.

### **Discussion**

Lamb (2000) has argued that anthropological studies of South Asians have largely ignored the lives of older women, focusing more frequently on younger women. To the extent that middle aged women are mentioned at all, Lamb argues they are cast in the role of the oppressive mother-in-law in accounts focusing on young women's perspectives. Buckley and Gottlieb (1988) have pointed out that, in general, ethnographic studies which address menstruation lack accounts from women themselves about their perceptions of their menstrual periods and rather rely on male informants to address the issue. One strength of this study, then, is that I have put myself in a position to understand the complexities of their perspectives by speaking to middle-aged women about their lives and experiences of menstruation and menopause.

I have found that British Pakistani women's perceptions of menopause are influenced by a range of factors related to their understandings and experiences of sexuality, Islam, British

society, ageing, fertility, the body, and pollution. Each of these has a different degree of importance for each woman and these influences compete in a sense since they do not necessarily lead to the same view of menopause and the menopause transition. The way that women learn about menstruation, sexuality, and menopause is related to age-related hierarchies and norms promoting ignorance and secrecy about topics considered sensitive, such as these. The Islamic rules about menstrual and sexual hygiene together with *unani-tibb* influence the perception of the menstruation and sex as polluting. This pollution is given a particular importance within the British context where secrecy, control of information, shame about sexuality and the body are also strategies deployed for maintaining the moral boundary between British Pakistanis and the wider society. In addition, menopause is often considered to mark the beginning of a clean, simple life and the end of both the pollution of sex and the pollution of menstruation. While women generally do not openly mourn this loss of their sexuality, they do express a desire not to age or lose their attractiveness. This is compounded by the belief that menopause itself causes health problems and makes a woman's stomach 'swell up' which is considered unattractive (as discussed in Chapter Five). At the same time, women find the menopause transition to be especially polluting because of irregular and/or heavy bleeding which is commonly experienced, making the menopause transition commonly unwelcome. However, for some women the desire not to continue to get pregnant along with the distaste at experiencing menstrual bleeding mean that they wish to stop their menstrual cycles.

I have found Douglas' theory of pollution very useful in illuminating the elements of the particular context which support the concepts of menstrual and sexual pollution operant among British Pakistanis. Others have argued that the idea leaves researchers open to sociologically-deterministic thinking, though Douglas herself is not guilty of this (Buckley and Gottlieb 1988). Buckley and Gottlieb cite several studies of menstrual pollution that have drawn on Douglas's theory and have elements of such a sociological determinism. Delaney (1988) and Lamb (2000) cite another way Douglas' theory of pollution may not fit all populations while still relying on the theory. They suggest that in the particular contexts in which they have carried out ethnographic work that women's bodies are not considered bounded as suggested in Douglas' phrase "the body is a model which can stand for any bounded system" (1966:142). Lamb, in her study of Bengali women in India (2000) suggests that women's bodies are considered 'open' and can infect or be infected by any objects or people with which they come into contact. Similarly, Delaney (1988) argues that women's



bodies in the Turkish village in which she worked are considered ‘open’, ‘diffuse’ and not bounded. However, at the same time as Delaney rejects the idea of body boundaries, she relies on this same concept in explaining why certain things are considered polluting. Indeed, Delaney says women are a threat to the social order because “between menarche and menopause a woman’s bodily boundaries are periodically transgressed” (1988:81). Perhaps some of the difference between these studies and my own lies in the fact that the very idea of boundaries is important in the British Pakistani context. Rather than finding that women were considered not to have a body boundary, I found that women’s body boundaries were perceived to have a particular ‘vulnerability’ (the vagina), which was considered important to safeguard.

The results of the present study are similar in some ways to other studies of South Asian women or women of South Asian origin elsewhere in the world. White and Sharma’s (2000) focus group study of South Asian women in Bradford also found that age was a factor in communication, women in their study said they were embarrassed to talk to younger women about menopause and menstruation and that they had never been told about menopause by their elder female relatives. British Asian women in Birmingham reported a similar sense of secrecy about menopause and also related it to secrecy about sex (Hunter et al. 2009). One participant in the Birmingham study observed, “[a]nything to do with sex is hidden under the carpet in Indian culture. Like I am educated but had no idea about menopause. I didn’t talk to anybody. My doctor was Indian but didn’t say anything. It is something about the Indian culture. We do suffer in silence” (Hunter et al. 2009:33).

White and Sharma (2000) also found that older postmenopausal women (in their 60s and 70s) were happier about ageing than younger women, which they suggest is related to the fact that the older women had handed over the running of the household to their daughters-in-law. Whilst it is possible that this could be where the women I interviewed might be headed over time, in that they too could begin to feel happier about ageing as they grow older, at the time of my study many in my sample still felt conflicted about it.

Several other studies of South Asian women’s perceptions of menopause have also found that women felt happy to be able to carry out religious responsibilities without interruption due to menstruation (Lamb 2000; Du Toit 1990; George 1988a, 1988b; White and Sharma 2000; Sarwar 1998; Hunter et al. 2009). This is the case across several religions, since some studies were of (or included) Hindu women (Lamb 2000; Du Toit 1998; Hunter et al. 2009) or Sikh

women (George 1988a,1988b; Hunter et al. 2009). However, there were differences in the extent to which this was accompanied by an overall sense that menopause was a positive thing. The present study did not find that women generally greeted menopause with a sense of relief. This contrasts with George's (1988) study of Sikh women in Canada, which found that women felt positively about menopause, as the cessation of menses brought them closer to a patriarchal ideal (that is, becoming more like men). Neither were my results like George's (1996) study of a Keralan fishing village in which she found that menopause was perceived in an overwhelmingly positive way (describing it as common, natural, as representing freedom from trouble, a sign of ageing, and as a gift from God) because their identity is based on selling fish (and therefore not threatened by the menopause transition). George, in fact, supplies a suggestion as to why women in a study such as the present one would find menopause more distressing: she expects women whose role is subject to change at menopause to have more negative experiences, and to hold more negative views, of the transition. This is very similar to Lock's (1993) explanation of why many Japanese women experience little distress at menopause, which is also related to role continuity. Indeed, while British Pakistani women did not generally view menstruation positively, they were not universally happy to see it end, in part because they associated it with broad changes in what was expected of them.

The in-depth ethnographic nature of this study has rendered an apparent contradiction in the results of a previous study of Pakistani women more sensible. Mazhar and Gul-e-Erum (2003) report that most women felt positive about the fact that their menstrual periods had stopped (75.7%), though a third of women were unhappy with their menopausal status (34.3%). Women in the present study had similar feelings: the distaste at dealing with menstruation did not translate into happiness to be going through the menopausal transition or happiness to be postmenopausal.

Results of some previous studies of groups of Muslim women have some similarities to those of the present study. For example, according to Delaney's ethnographic work Turkish village women also hide their menstruation from men and engage in secret eating if menstruating during Ramadan in order to hide their menstruation. However, Delaney (1988) does not report the influence of age-based hierarchies on talking about menstruation, pregnancies, and menopause. Indeed, she reports that among women there is very open conversation about reproduction and menstruation. Likewise, a Saudi Arabian study (Al Sejari 2005) found that women felt clean after menopause and were glad they could pray and fast but they did not

‘medicalise’ menopause and thus rarely went to see a doctor about it. In contrast, many women in the present study had visited the doctor about menopause (125 of the 173 women who said they had experienced changes due to menopause had visited the doctor about these changes) and did think of the menopause transition as akin to an illness as I have explained. Studies from other countries found similar lack of disclosure about reproduction and menstruation. El Saadawi, an Egyptian doctor, writes of very similar ideas. She states that, in women, ignorance of the body and its functions is “a sign of honour, purity and good morals” (1980:67). She says that even mature women tend to nurture the ignorance and ‘simplemindedness’ to protect their reputation and virtue. El Saadawi says this applies to all matters related to the female body as well as all matters related to sex and men, thus, menarche is usually a shock and El Saadawi describes her own terrible panic upon discovering her first menstrual blood.

However, similarities also extend beyond South Asia and the Muslim world. Mingo and colleagues’ (2000) study of Hispanic, Native American, and white women in the US found that women all related their menopause experiences to their experiences of menarche, which, like those of the women in this study, were often of finding oneself afflicted with an unknown condition, since no one had told them about menstruation before it occurred. Secrecy was a general theme in their accounts of menstruation, sex, and menopause, with some women reported having married and fallen pregnant without having had reproduction explained to them.

Beyene’s (1989) ethnographic study of menopause in a Greek village found that after menopause women were no longer considered a sexual threat to village morals, being considered to have ‘clean souls’. Beyene also found that wearing age-appropriate clothing was very important for postmenopausal women, as with British Pakistani women. However, these Greek women were allowed to stop covering their hair and to begin to travel alone, which I did not find to be true of British Pakistani women, who appear to maintain careful modesty after menopause and who rarely travel alone. Similarly, Flint’s (1975) ethnography of Indian Rajput women found that the rules of *parda* were relaxed for postmenopausal women who were found sitting and joking in the company of men. This contrasts quite starkly with the behaviour of postmenopausal British Pakistani women in Leeds and Bradford.

The belief noted in this study that water can enter a menstruating woman and disrupt her menstruation if she bathes has also been found in other social contexts. A Welsh study found that women believed that, if they bathed, the water could get inside them and stop them menstruating; however, for the Welsh women, this was in the context of quite different beliefs and attitudes about menstruation (Skultans 1988).

While clearly not universal, people in many societies believe that menstrual blood is polluting (see Buckley and Gottlieb 1988 for an excellent review) and the idea that a woman is in some way 'clean' after menopause has cropped up in many studies of Muslims (Wasti, Kamal, and Robinson 1994; Al Sejari 2005; Flint 1975), South Asians (George 1988a, 1988b; Wasti, Kamal, and Robinson 1994; Flint 1975), and other groups (Beyene 1989). Similarly the idea of a loss of sexuality at menopause is found in numerous studies including those from Greece (Beyene 1989), Morocco (Mernissi 1975), India (Lamb 2000); and among South Asian women in South Africa (du Toit 1990) despite having been called a 'myth' by some anthropologists (Davis 1997).

A broader point arising from the results is the significant effect that religion and culture have on how British Pakistani women learn and talk about their bodies, particularly about reproduction and menstruation (including menopause). While the anthropological perspective emphasizes the importance of trying to understand 'emic' or insider perspectives, that is, British Pakistanis' own ways of understanding and evaluating behaviour, it is perhaps pertinent to give some consideration to the perspective of mainstream public health in the UK, which emphasizes health education, partly as a way of managing health outcomes. From this kind of public health perspective, the evident lack of education and communication about menstruation and reproduction, and the resulting distress which has been documented in the present study, could be conceived of as a problem requiring intervention. Indeed, while the women in the study themselves often seemed to find it regrettable that distress was the result of lack of open discussion about these matters, although they also felt that maintaining a level of secrecy and lack of knowledge was important for their daughters and, in some cases, themselves. Women often talked specifically about avoidance of open discussion about menstruation and reproduction constituting a method of inculcating modesty and moral purity in more junior members of their family. Some women clearly prioritised this modesty and purity (and their own discomfort in talking about such topics) over greater freedom to communicate about these issues and the benefits of such freedom (i.e. distress spared).

This is at odds with the norms of the wider British society (and the public health discourse which, in part, reflects these norms), in which open communication about subjects which are considered 'natural' and which are linked to health and hygiene are often expected to be discussed much more openly. This open discussion is intended partly as a practical method for managing outcomes such as distress on the part of children and adolescents, as well as the incidence of teenage pregnancies and sexually transmitted infections. It also appears that for most other Britons information about subjects like menstruation and reproduction is generally considered both morally neutral and beneficial both for young people and adults. These views are clearly not shared by the participants in the present study. This chapter has argued that the views of the participants on communication about sex and menstruation are, in part, a response to life in the UK for an ethnic minority group which feels itself to be increasingly subject to negative attention and living in a region which has been the site of rioting and large-scale inter-ethnic violence over the past thirty years.

While documenting this phenomenon within British Pakistani life is an important task which this chapter has undertaken, this documentation may prompt consideration of intervention on the part of those working in public health. As such it is worth discussing the practicability of potential interventions which would aim to provide health education for people of Pakistani origin about menstruation and reproduction and to change attitudes to communication about these topics. Such external intervention could well be viewed in a very negative light and perhaps seen as a direct attack on traditional and religious values, since the participants in the study clearly see these as underpinning their attitudes toward communication about these topics. It is worth noting that while women did not communicate openly about these things with other women, they clearly did feel that they could speak to a GP about menstruation and reproduction as needed. Indeed, as previously noted, the majority of women experiencing changes which they believed were related to menopause discussed these changes with a GP.

It is also possible that reading the results of this study (which will be disseminated both within and outside of the academy) may prompt some Pakistanis to try to change their own attitudes and behaviour in some ways in order to make experiences like menarche, menstruation, and menopause easier for themselves and their daughters. At the same time the secrecy and lack of in-depth knowledge about matters menstrual and reproductive appear to be an acknowledged part of life for British Pakistani women which they may choose not to change.

## **Conclusion**

There are many factors which influence how women perceive menopause. Knowledge of the broad social context in which it takes place makes it possible to understand why women understand it the way they do. Among British Pakistani women the recent socio-political history of British Pakistanis is a key factor as are Islamic guidelines about hygiene and modesty and *unani-tibb* –related understandings of the body. More basic influences include the way British Pakistanis communicate with one another, which is informed by a belief in an ideal of ‘simplicity’ and structured around age-related hierarchies modelled on the family.

## CHAPTER EIGHT: DISCUSSION AND CONCLUSION

This is the first in-depth study of menopause among British Pakistani women. The aim throughout has been to combine the richness and depth of long-term ethnographic research with the analytic power of multivariable regression models in order to produce new insight into menopause among British Pakistanis and to demonstrate the strength of this approach to understanding menopause in general.

Since menopause is in so many ways variable and previous research has been so inconsistent, it is not surprising that the results of this study fit with those of some previous studies and not with others. Few studies have used a biosocial perspective and both quantitative and qualitative methods, which has meant that this study has been able to generate some interesting and novel insights, both specific to the British Pakistani population and more generally in terms of how we think about and investigate menopause and the menopause transition.

This study has found evidence to support Collins' claim that "a better appreciation of cross-cultural differences in the experience of menopause may derive from an emerging interdisciplinary model in which symptoms are seen as a result of increased vulnerability due to hormonal changes in interaction with psychological and sociocultural factors" (2002:65). In using both quantitative and qualitative methods the aim has been to develop the sort of "interactive psycho-bio-cultural model of menopause" which Collins argued, in the International Position Paper on Women's Health and Menopause (2002), is needed. Collins (2002) argued in particular for a model, "which recognizes the interplay between the individual and her psychosocial and cultural environment" (2002:73).

Thus, the process has involved building bridges between the five approaches to studying menopause identified by the researchers at the Study of Women's Health Across the Nation (SWAN), a large, longitudinal study of US women from a range of different ethnic backgrounds. These approaches are:

the *biological approach* ascribes the experience of the menopause particularly within the framework of alterations in metabolism and endocrine status. The *psychological/psychosocial approach* maintains the importance of stressors and loss as catalysts for symptoms. The *sociocultural/environmental approach* indicates that cultural constructs and lifestyle factors define our responses toward the menopause and

the presentation of potential symptoms. Finally, the *feminist theory* views the menopause as a normal developmental stage with its own unique challenges [emphasis in original] (Sowers et al. 2000: 177).

This has been particularly important given that Sowers and colleagues also noted that “the role of culture and acculturation (the process of incorporating the customs, norms, identification, and social and working activities from different societies in shaping health behaviours) has not been widely applied to the menopausal transition” (2000:184-185).

The present study’s methodological approach and perspective closely resemble the integrated approaches described by both Sowers and colleagues (2000) and Collins (2002). I have considered individual vulnerabilities in relation to social support and stress, as is recommended by both of the aforementioned studies. I have considered menopause from a biological standpoint as an event involving body systems including the endocrine system. I have investigated cultural constructs and their impact on symptom attribution to menopause and perceptions of menopause. I have also taken as a fundamental point that menopause is a normal part of the lives of women and is not, in itself, pathological.

Several variables which have traditionally been associated with the timing and experience of menopause are of somewhat ambiguous biological significance, such as education and social class. The biosocial approach adopted in this study has made it possible to understand better how variables such as these may operate on a biological level by understanding what they do and do not mean on a social level in a particular context. Likewise, it has been possible to look at the effect of a biological change, in this case cessation of menses, on women’s social lives.

A particular example is the concept of *biradari*, which has emerged as a correlate of timing of menopause and experience of hot flushes. An understanding of the ethnographic context has been crucial in correctly applying this concept. Without insight into the social meaning of *biradari*, one might have assumed it to simply have a genetic reality because of the endogamy (and particularly consanguinity) within *biradaris*. However, greater knowledge of marriage and kinship among Pakistanis makes it clear that *biradaris* are not wholly endogamous, and that, as with many societies that trace descent patrilineally, maternal genetic contribution is ignored. In fact, many Pakistanis do not think of themselves as related to their mothers or maternal relatives if their mothers are not related to their fathers.



Similarly, some of the meanings *biradari* does have for the lives of British Pakistanis have been identified allowing this study to consider mechanisms which fit the ethnographic data.

A strength of the study has been the inclusion of women with a range of different education levels, employment histories, linguistic abilities, regional origins (within Pakistan) and class backgrounds. Furthermore the study participants were not recruited from menopause clinics or other health care settings, meaning that the study avoids a bias toward women with troublesome experiences of menopause and instead allows for a broader picture of menopause experiences. This research has looked to investigate the menopause transition from women's own perspectives, which has helped to make clear what aspects of social context are most relevant to understanding women's perceptions of menopause and menopause symptoms.

### **Summary of Major Findings**

The research findings illustrate that all aspects of British Pakistani women's menopause which have been assessed in this study (timing of menopause, symptoms attributed to menopause, hot flush experience and severity, and perceptions of menopause) are associated with aspects of the particular socio-cultural context in which British Pakistani women live.

### **Predictors of Timing of Menopause and Predictors of Hot Flushes**

The present study found that British Pakistani women from the *Choudhary Jatt biradari*, a conservative group which has particular social and political power in the area in which the study was carried out, were more likely to have a later menopause and are less likely to have experienced hot flushes. It also found that women who rated themselves high on the ladder of social status were more likely to have an earlier menopause and that women from a higher occupational social class were more likely to have experienced hot flushes. I have suggested that these two sets of results are related to access to social support and the relationship between social status and discrimination in British society.

This study has found that hot flushes were less likely to be severe among British Pakistani women who are less anxious. This may indicate a relationship between the stress response and the severity of hot flushes. Another significant predictor of menopause timing and

experience was acculturation, with those women who were less acculturated being more likely to have an earlier menopause and less likely to have severe hot flushes. These two findings regarding acculturation can be interpreted in different ways. It is possible that the two findings do not relate to the same aspects of acculturation. I have identified two main possibilities for interpreting the relationships between acculturation and timing of menopause and acculturation and experience of hot flushes. The first option is that less acculturated British Pakistani women are more like women living in South Asia in their hot flush experience and in the timing of their menopause because of acculturation-related changes which influence hot flush severity and timing of menopause (making hot flushes more severe and menopause later). What it is in particular about acculturation that influences menopause is not clear but likely suspects would be changes in lifestyle and behaviour, some of which are already thought to directly influence age at menopause and hot flush severity (e.g. diet).

The second option takes into account the social implications of acculturation and suggests that the results of Chapters Four and Six may relate to different aspects of acculturation. While the timing of menopause may be related to aspects of acculturation which directly influence reproductive biology over the long term, hot flush severity may reflect more immediate social consequences of acculturation. As suggested in Chapter Six, the relatively modest acculturation that was exhibited by women in this study may serve to create ambiguity and tension between identities and sets of norms. This makes sense because many studies have found relationships between timing of menopause and early life environment (and other influences over the whole lifespan), while none have demonstrated a relationship between early life exposures and hot flush experience. In fact, the social effects of acculturation could have become more important recently as tensions and boundaries between British Pakistanis (particularly those from Bradford and Leeds) and the wider society have become more entrenched over the last two decades. The ethnographic data lend credibility to this idea. When women talked in their interviews about acculturation, frequent references were made to recent events (especially those in the last ten years) which have made boundaries between British Pakistanis and other British people (especially white British) more pronounced. These include the public disturbances in Bradford in 1995 and 2001, the attacks on the World Trade centre (and the subsequent war in Afghanistan), and the war in Iraq.

The results from the SWAN study, which found an association between symptom experience and acculturation among Hispanic women (Green 2008), suggest that the two different

explanations for how acculturation influences menopause may both have validity (Santoro and Green 2009). Santoro and Green (2009) have suggested that immigration increases economic status and education levels but that acculturation may increase exposure to unhealthy habits and behaviours (such as smoking, drug use, and unmarried pregnancy) which may increase vulnerability to symptom experience. They further suggested that acculturation may bring women more into contact with the dominant culture and lead to more experience of ‘othering’, a process in which those who are identified as different are subordinated and experience discrimination and mistreatment. They also suggested that the newly adopted health habits and behaviours may erode family support (because they are disapproved of), which would offset the improvements in status and may create vulnerability to symptom experience. While this view lacks some nuance, it provides a way of understanding an interrelationship between the two types of explanations and, although Santoro and Green did not mention influences on timing of menopause, their arguments on changed health behaviours and the impact of discrimination could apply to this as well.

A further point of interest is that acculturation and *biradari* were found to be interrelated, while they showed independent and opposing effects on timing of menopause. Close social networks such as *biradaris* may prevent cultural change and can hinder social and economic advancement because of social control operating within them (for example, sometimes attaching a negative value to education). Conversely, those who do manage to advance their status sometimes choose to weaken their ties to their original *biradari* networks since higher status British Pakistanis typically prioritise status over *biradari* when building networks of reciprocity (which includes exchange of brides).

## **Symptoms of Menopause**

In this study women reported having experienced a wide range of changes at menopause, most of which are not on symptom checklists. This indicates that the extent to which self-reporting is influenced by ‘stereotypes’ may have been overestimated by some authors (Kaufert and Syrotiuk 1981). In addition, women did not agree with the division inherent in the design of the ‘everyday complaints’ symptom checklist between ‘everyday complaints’ and menopause symptoms. The symptom checklist approach has a number of important limitations, not the least of which is that it does not allow much new information to feed into debates about menopause ‘symptoms.’ Local biologies may determine the extent to which

symptoms are big changes from previous experience, and certainly local culture may determine whether this change is likely to be distressing or important. However, this does not mean that there are not universal changes due to menopause whether they are experienced as uncomfortable or troubling or not. Furthermore, items on symptom checklists can be understood in ways other than the researcher intends based on local ideas, as in this case with ‘swelling of body parts.’ This study found that age, menopause status, and the country in which a woman grew up may affect attribution of symptoms to menopause. Older women, postmenopausal women, and women raised in Pakistan were more likely to believe that menopause can cause both persistent cough and sore throat, while women raised in the UK were more likely to attribute a number of indicators of emotional or psychological distress to menopause. The understandings of menopause in other societies may indicate new directions for research, such as, in the present study, the identification of change in body fat distribution (which appears to apply cross-culturally) which is understood to be part of menopause among British Pakistani women, possibly because of their particularly high risk of chronic disease related to abdominal body fat.

### **Social Influences on Perceptions of Menopause**

The qualitative data have shown that many aspects of the social context particular to British Pakistani women in Leeds and Bradford impact on women’s understandings of menopause. Based on intensive ethnographic fieldwork, I have been able to draw connections between how women learn about menstruation and reproduction, the importance of hierarchies, modesty, and secrecy, the tensions between British Pakistanis and the rest of British society, and the polluting aspects of experiencing menopause, menstruation, and reproduction.

This type of broad understanding of women’s perspectives on menopause is relevant from a public health perspective since it is an important part of developing the aims and methods of future interventions. For example, the lack of uptake of hormone replacement therapy (HRT) among British Asian women has been identified as a problem by several sources (Harris et al. 1999; Sarwar 1998; Sethi and Pitkin 2000). In this case, a superficial understanding of how British Pakistani women see menopause could be misleading. Knowing that British Pakistani in fact women often medicalise menopause, frequently considering it to be an illness and seeking GP advice (sometimes repeatedly) about it, and that they furthermore tend to hold negative ideas about ageing, might suggest that they could be easily convinced to take HRT

and that only better education about HRT is required (Sarwar 1998; Sethi and Pitkin 2000). However, while the above observations are correct, the ingrained belief in the polluting nature of menstrual blood and the idea that HRT is a way of ‘fighting with God’ and resisting divine fate mean that an intervention aimed at raising HRT-use would face significant barriers.

### **Theoretical Implications**

The results of this study show the usefulness of an open, explorative approach which considers the particularities of the social context. As I argued in Chapter One, an understanding of social context helps us better understand the factors which appear to influence menopause. While variables like occupational social class may be measured in the same way in different studies, they clearly do not mean the same thing for women in different social contexts. I have shown that higher social class, while indicating perhaps greater financial resources, does not mean less vulnerability to symptoms of menopause for British Pakistani women the way it does for Australian women (Dennerstein et al. 2000; Dennerstein et al. 1993), white British women (Kuh, Wadsworth, and Hardy 1997), Mexican women (Sievert and Espinosa-Hernandez 2003), and women of various ethnic groups in the US (Avis et al. 2001; Avis, Crawford, and McKinlay 1997; Gold et al. 2000; Wilbur et al. 1998; Schwingl, Hulka, and Harlow 1994). This is possibly because higher social class can also mean a more constrained social life in a region in which many Pakistanis are from lower occupational social classes.

As argued in Chapter Five, allowing women to speak about their experiences and understandings helps to open ourselves as researchers up to new ideas; the more closed the approach, the less the possibility of new insight. I have suggested that there are some important advantages to an approach which seeks to work *with* research participants rather than simply trying to get around them. The things we might call ‘bias in reporting’ can be things we try to work with and understand; indeed this is illustrated in Chapters Five and Seven. British Pakistani women are found to pay attention to their menstrual periods and spotting and irregularities because it means something important for their daily life, so they are especially aware when their cycles and flow are changing as they approach menopause. This may be an advantage in identifying perimenopause. Likewise, they have shown awareness that a change is occurring as fat accumulates around their abdomens since this has

both social meaning and biological significance for them, as they consider it unattractive and it is particularly dangerous to their health. Thus, I have remained open to links between qualitative research findings and biology, where appropriate, and considered potential mechanisms which make sense of both the biological and social data.

### **Generalisability of findings**

While the social findings of the present study are in general limited to the particular context and time period, the biological findings have applicability at the level of the species. This generalisability, however, does not operate at the level of the particular variables, but instead at the level of the explanations and suggested mechanisms underlying the relationships detected in the present study. These mechanisms would be expected to operate cross-culturally, though they may be triggered in different ways. Certain culturally-specific predictor variables would not make sense for populations other than the one in the present study (*biradari*, for example). Even where the specific predictors could be assessed in a population, it would not be reasonable to expect that these would always have the same relationships to the outcome variable. *Biradari*, again, is a particular example: given the apparent importance of local history and circumstances in explaining the results regarding *biradari* in the present study, one would not expect that in all Pakistani populations where this *biradari* is represented that Choudhary Jatts would show the same results compared with other *biradaris*. Generalisability, in this case, lies at the level of the suggested explanation of how membership in the group might influence biology, that is, via social support, rather than in the category itself.

As mentioned above, the social findings of the present study are less generalisable than the biological findings. However, there are important social processes and trends which may operate in other contexts, particularly those which have similarities to the ones studied in the present study, such as migrant Asian groups or other Muslim minority groups both in the UK and in other countries. However, there is also a likelihood that some findings would not hold for even other British Pakistani groups, since many of the findings relate to the particular research context (Bradford and Leeds), as with any ethnography. For example, the extent to which dialogue about subjects like menopause and sex is constrained may be different in other Pakistani migrant groups in Britain and abroad because external pressures may be different, though to some extent a focus on purity is likely to be found among any Pakistani

group. Any future studies seeking to investigate whether similar social processes are at work need to be well-informed about local history and grounded in the dynamics of the particular research context.

### **Menopause and the Role of Social Influences on the Soma**

This research has suggested a link between the previous work on the health impact of social circumstances and menopause. Despite the fact that the literature contains suggestions that stress may influence timing and experience of menopause, the mechanisms underlying this influence have largely been absent from this literature, as has any link to research which has demonstrated a role for stress or support in understanding physiological variation.

On the other hand, the research which has looked at the impact of the presence or absence of particularly salient forms of social support has not generally considered the effects of these on reproductive function. Most of the work has considered these in terms of buffers against poor health outcomes, such as hypertension (Dressler 1991a, 1991b; Dressler, Balieiro and Dos Santos 1997; Dressler et al. 1986; Dressler, Dos Santos and Viteri 1986; Dressler and Bindon 2000) and depression (Dressler et al. 2009; Dressler et al. 2007). Likewise, the work which has looked at the impact of denial of claims to higher social status because of discrimination has only shown a relationship between such frustrations (sometimes called status inconsistency) and hypertension (Dressler 1991b; Gravlee, Dressler and Bernard 2005; Sweet et al. 2007). A great strength of this body of work has been its consistent use of ethnographic insight in determining what the pertinent markers of status are and which relationships can provide the relevant social support. Use of such insight has made the quantitative demonstration of the distinct relationships between salient social support and health outcomes possible. The results of the present study indicate that important factors to consider in understanding variation in timing of menopause and hot flush experience may be access to locally salient social resources and frustration in attempts at achieving a life commensurate with one's perceived social status.

One of the ways social support may affect reproductive biology (and thereby the timing of menopause) and thermoregulatory processes (and thereby the experience of hot flushes) is via the hypothalamic-pituitary-adrenal (HPA) axis, since the HPA axis appears to be influenced by "the presence of familiar social partners and/or salient social relationships" (Levine 2000:

154). A meta-analysis of 22 laboratory studies of physiological responses to stressful tasks found that those who were receiving social support had reduced HPA axis response to the stress (Thorsteinsson, James, and Gregg 1998). The precise mechanisms by which social support influences the HPA axis are still being investigated (de Vries 2002; Heinrichs et al. 2003).

This influence on menopause is plausible for two reasons: (1) the hypothalamus itself is a key centre of thermoregulation in the body and (2) the HPA axis is closely linked to the hypothalamic-pituitary ovarian (HPO) axis. Indeed, a condition known as hypothalamic amenorrhea (Liu 1990; Ferin 1999) in which emotional distress triggers amenorrhea via effects on the hypothalamus in women of reproductive age has been long documented. Hypothalamic amenorrhea is suspected to be a result of increased activation of the HPA axis as a result of distress (Meczekalski et al. 2000; Genazzani et al. 2001; Lindahl et al. 2007). Previous studies have not considered the particular role of social support but have found links between distress and levels of reproductive function. A recent large, longitudinal study found that compared with women who had no history of depression, women with a lifetime history of depression entered perimenopause earlier and had higher FSH and LH levels and lower estradiol levels at study enrolment (when participants were all premenopausal) and during the 36 month follow-up period after adjustment for covariates (Harlow et al. 2003). Harlow and colleagues' (2003) study also found that the association between early entry into perimenopause and depression was stronger in the women who had higher depression scores on the scale used in the study (the Hamilton scale) at baseline, indicating that there may be increasing effects on reproductive ageing as severity of depression increases. A recent US study has found that otherwise healthy premenopausal women presenting with new untreated clinical depression and no prior mental health problems had lower serum estrogen levels than their (age and cycle-day) matched controls indicating that even commonly observed clinical depression may have HPO axis effects (Young et al. 2000). This indicates that distress does not necessarily have to be either very severe or long-term to have an influence on reproductive function. Whether there are effects at levels of distress below diagnostic cut offs is not clear but it does appear that above these diagnostic cut offs for depression that there is greater likelihood of decreased reproductive function and increased rate of ovarian ageing. I suggest that the above-described mechanism may account for the findings of the present study regarding *biradari*, social class, and perceived social status.



In the case of the possible role of status inconsistency in influencing the timing and experience of menopause, I have suggested that the reason that higher social status is related to earlier menopause and greater likelihood of experiencing hot flushes may be due to the discrepancy between what people expect based on their status (perceived or otherwise) and what is available to them in British society. Status inconsistency related to discrimination has been associated with higher blood pressure in studies in Puerto Rico (Gravlee, Dressler and Bernard 2005), Brazil (Dressler 1991a), and the US (Dressler 1991b; Sweet et al. 2007). The suggested mechanism for this relationship is increased sympathetic nervous system activation due to frustrating and stressful social interactions in which people “are not treated in accord with their own self-image” (Gravlee and Dressler 2005:203). However, feelings of frustration are known to activate the HPA axis as well (Levine 2000; Scott and Dinan 1998; Henry 1992), meaning that status inconsistency may influence menopause by the same mechanism described above. The status inconsistency to which I refer has been noted by other ethnographers (Bolognani 2007a; Saifullah Khan 1977). Indeed Saifullah Khan (1977) suggested that this inability to realise status is not a problem since “financial resources earned in Britain would not markedly alter his [sic] status position or power in British society...But he can use his new wealth to gain an instant, if limited, recognition in his home society. Thus, the resources of one context can be utilised to overcome the constraints of the other” (1977: 82). My results have indicated otherwise. The fact that there is some evidence of a somatic impact of this inconsistency, particularly a somatic impact which is considered undesirable (as earlier menopause and greater risk of hot flushes are), indicates that the resources of the Pakistani context are not fully overcoming the constraints of the British context.

### **Menopause in Evolutionary Perspective**

As mentioned in Chapter One, the Adaptive Onset Hypothesis (AOH) is useful in linking the literature about the origin of menopause with our knowledge about variation in timing of menopause (a literature which rarely addresses the subject of evolved mechanisms) and creating an overarching way of understanding this variation. However, Kuhle (2007), the author of the AOH, has not to date explored or suggested potential biological mechanisms underlying the relationships he has predicted. While in this study I have not tested many of the predictions of this hypothesis, I have looked at one quite straightforwardly: parity. Kuhle’s prediction that low parity would be associated with later menopause was not borne

out in the results as no significant relationship was found between parity and timing of menopause in this study.

Other than this, I have proposed two potential relationships based on the logic of the AOH. Based on Kuhle's suggestion that early menopause would be related to "having relatively limited monetary resources" (2007:334), I predicted that menopause would be related to social class and perceived social status (as measured by the participant marking a rung on a picture of a ladder), since I thought these would be related to access to resources. In fact, the measure which might have been more closely related to monetary resources, occupational social class, was not found to be associated with timing of menopause. Additionally, the relationship found between perceived social status and timing of menopause was in the opposite direction to the prediction based on the AOH. I have explained this finding in terms of ethnographic data which helps to make clear the potential disjuncture between social resources and monetary resources for some British Pakistani women. This leaves open the possibility that the presence of monetary resources may predict timing of menopause, although occupational social class and husband's occupational social class did not.

If we assume that the mechanisms controlling timing of menopause have evolved to detect when it is and is not advantageous to maintain reproductive function, the finding regarding social status also indicates that the complex realities of social circumstances may mean that what would appear from the outside view to be a situation in which it would be evolutionarily advantageous to continue to reproduce might, in fact, be a situation in which it is advantageous to *end* reproductive function.

The results of the present study suggest that qualitative methods, especially ethnographic methods, can play an important role in testing the Adaptive Onset Hypothesis in future studies. The finding in the present study that did appear to fit one of Kuhle's predictions, that is, the relationship between *biradari* and timing of menopause, was unexpected at the outset because ethnographic insight was required to identify it. Since not all kin would be willing or able to help raise future offspring, the salience of the presence of certain types of kin would depend on local social organization and marriage customs since, for example, virilocal residence may take a woman away from the kin who might be most interested in helping her to raise her offspring. Difficulties such as these in identifying the best indicators of Kuhle's predicted influences on timing of menopause (such as "Having a husband who is likely to protect and to invest in future offspring" or "Having relatively limited monetary resources")

(2007:335)) may mean that a biosocial approach including ethnographic methods would be best suited to testing the AOH.

More broadly, however, the relationships between social support and the variables which predicted timing of menopause in this study have certain evolutionary implications of their own. Since humans typically live in groups, and require the help of others to reproduce successfully (i.e. human females require assistance to give birth (for a review see Rosenberg 1992)), it is intuitively plausible that we are quite sensitive biologically to our level of social resources, a lack of which would make one more vulnerable. Our species may have evolved a sensitivity to social resources within the mechanisms which control the timing of menopause so that women with more social support can continue to keep the opportunity open for investment in more offspring and women with less social support can shift investment to themselves and their existing children or grandchildren. If this is the case, it lends some support to the Grandmother hypothesis and/or the Mothering hypothesis, described in Chapter One.

### **Reflections on Methodology and Recommendations for Future Research**

The effect of combining quantitative and qualitative methods in the present study has been very positive, allowing the work to be more exploratory and making generation and exploration of new hypotheses possible. As such, the combination of methods was crucial to arriving at the results and conclusions of the present study. This is most obvious in the discussion sections of Chapters Four, Five, and Six where both types of data are brought into direct communication with one another.

When carrying out research that includes both quantitative and qualitative data collection there are choices to be made about whether to carry out both types of data collection at the same time and, if not, which to do first. In the case of the present study, the two types of data collection ran concurrently for most of the fieldwork period and in the last few months there was a stage of solely qualitative data collection. Carrying out qualitative data collection first would have had the advantage of making it possible to develop a more refined questionnaire for use in the study and perhaps to develop my own measures of depression and acculturation.

However, the way data collection proceeded in the current study had several advantages of its own. The concurrence of quantitative and qualitative data collection, particularly during the questionnaire-based interview, meant that I had a stronger sense of each participant from whom I collected quantitative data than I would otherwise have had. This has informed the analysis of both the quantitative and qualitative data in the present study. Moreover, as mentioned previously, the scales used had the advantage of being validated indices. There was also an advantage to the concentration of qualitative data collection near the end of the fieldwork period, during which most of the life history interviews were carried out. This late in-depth qualitative data collection made it possible to explore ideas which had come up in the previous 8-9 months of fieldwork during informal discussions or questionnaire-based interviews.

Researchers wanting to study British Pakistanis in the future can take from the present study the idea that relatively large-scale recruitment is possible in this group but are advised of the importance of taking time to build rapport and trust by carrying out participant observation during intensive fieldwork and by giving time during quantitative data collection to listen to participants. This listening on the part of the researcher (which I have referred to as qualitative data collection during questionnaire-based interviews and which is alluded to above) has proven as important for data analysis as for rapport-building and successful recruitment of participants. This may push against trends to hire out data collection to people who will not be part of the analysis but still stands out as a successful part of the way the present study was carried out.

One thing I might do differently if carrying out the same study again, or embarking on a similar project, would be to avoid the involvement of NHS staff (in their official roles) and the NHS research ethics procedures. Researchers wishing to engage in similar biosocial research would also do well to avoid the involvement of the NHS (in recruitment or any other area) if possible so as to obviate the need to seek NHS research ethical clearance because of its influence on research methods. Since NHS research ethics committees require interview schedules and questionnaires to be formulated and fully justified in advance of the start of data collection, they are not compatible with an approach which seeks to incorporate qualitative findings into questionnaire design. Studies which do not take this approach miss out on the opportunity to streamline data collection and sharpen particular lines of questioning by tailoring the questionnaire based on a more in-depth knowledge of the population under study.

Larger sample sizes for the quantitative analyses might have made it possible to detect other statistical relationships (that is, increasing the statistical power of the study would have reduced the likelihood of Type II error). Based on the information gained from the study, it would be possible to calculate sample sizes which would lead to a reduced likelihood of this type of error. For example, knowing that in the present study 40% of women reported hot flushes would mean that a future study could calculate and recruit a sample large enough for a higher powered analysis of predictors of hot flush severity than was possible in the present study.

Given that some of the associations found in the quantitative analysis in the present study come from relatively small sample sizes, it is worth pausing to assess the implications of this for the validity of these associations. Researchers have in the past suggested that associations found in studies with small sample sizes may be less reliable than those found in studies with large sample sizes, however, there is also a well-established opposing view, that, for a given p-value, one can be more confident in the departure from the null hypothesis with a smaller sample size than with a larger one (Royall 1986; Bakan 1970, 1966). Thus, in this view, the fact that the statistically significant associations found in the present study come from relatively small sample sizes is a positive sign since it suggests more dramatic effects (Bakan 1970, 1966) and a greater ‘clinical’ significance to the results (Royall 1986). This is particularly true of the findings with the lowest p values such as the association between timing of menopause and *biradari*, which, after controlling for other variables, was 0.013, and the association between factor score for Factor Four (persistent cough and sore throat) and participant age which had a p value of 0.003. However, it is also important in the present study to consider that the relatively large number of tests carried out increases the chances of results which are statistically significant just by chance.

It also remains possible that the results are not representative of the population in question (middle-aged British Pakistani women living in West Yorkshire) since the sample was not selected randomly and since calculations could not be done to establish what sample size would be representative. However, the recruitment strategies used enabled a broad reach across socio-economic divisions, geographic areas, and other characteristics of interest so the sample does include a broad cross-section of middle-aged British Pakistani women from the area. Furthermore, it is questionable whether a representative, random sampling approach could lead to effective recruitment of women in this group (particularly with regard to rapport building) even if data were available to make such a strategy workable.

Future research should attempt to build on the findings of the present study and seek to determine the extent to which social support and status inconsistency influence HPA axis activity and, in turn, whether measures of HPA axis activity can be shown to predict timing of menopause and menopause symptom experience. This would effectively test the proposed mechanism whereby social support and status inconsistency are associated with timing and experience of menopause. The role of acculturation in the menopause transition should also be investigated in order to unpick the complex changes associated with acculturation and determine what their relationship to menopause is, and whether lifestyle changes alone explain changes in timing and experience of menopause or whether the psychosocial aspects of acculturation also play a role.

As described in Chapters Three and Four, the main acculturation variable used (the SL-ASIA Total Score) is a broad measure of acculturation covering many aspects of change including preferred way of self-identifying, food and media preferences, friendships, values, etc. This means it can be thought of as something of a blunt tool where particular physiological outcomes (such as severity of hot flushes) are being predicted (as opposed to research which seeks to gain a broad idea of the level of acculturation in a group). In addition, the ‘bluntness’ of the tool may account for (either instead of or in addition to the explanation above) the independent and opposing associations of *biradari* and acculturation on timing of menopause already noted.

However, in its favour, use of this variable has allowed for testing of novel hypotheses in a way which can be considered more valid than alternative approaches (such as creating my own measure of acculturation), since this variable comes from a validated index, the SL-ASIA Scale. This is ideal for such initial exploratory work. I have made suggestions above about the particular aspects of acculturation (psychosocial, lifestyle, or otherwise) which might drive the statistical associations between acculturation and timing or experience of menopause. These may be useful in informing future research, which could empirically test these suggestions. Such future studies may be in a better position to design their own measures of acculturation, for use in place of or alongside a scale like the SL-ASIA, since relationships have already been demonstrated in the present study using a validated index.

An important avenue for understanding the relationship between menopause and psychosocial aspects of acculturation may be cultural consensus models, such as those developed by Dressler, which pinpoint the extent to which individuals are able to live up to

cultural ideals and expectations. These may be applied to the understanding of variation in timing and experience of menopause. As described in Dressler et al. (2005), Dressler (1996), and other methodological publications, cultural consensus models must be developed using appropriate ethnographic data in order to be applicable. Thus, cultural consensus models can be developed in future studies on British Pakistanis either by utilising ethnographic data such as that collected and presented in the current study or via collecting appropriate ethnographic data as a first stage of the project.

Finally, with regard to future studies of menopause among British Pakistani women which focus on its relationship to acculturation and timing of migration, it is worth noting that attempts to recruit more British-born women and more highly acculturated middle-aged women should be much more successful as the British-born population ages over the next ten to fifteen years.

### **Conclusion**

The present study has sought to investigate menopause among British Pakistanis, using a biosocial approach which integrates previously recommended perspectives and employs both quantitative and qualitative methods. The study has aimed to assess potential predictors of the timing and experience of menopause among British Pakistani women and to develop a contextualized understanding of the perceptions of and beliefs about menopause and reproductive ageing among British Pakistanis in Bradford and Leeds.

The present study has found later menopause to be associated with belonging to the *Choudhary Jatt biradari*, lower perceived social status, and higher level of acculturation. Less likelihood of having experienced hot flushes was found to be associated with belonging to the *Choudhary Jatt biradari* and lower occupational social class. Hot flush severity was found to be positively associated with both anxiety and acculturation levels. Based on the ethnographic data I have suggested that the results related to *biradari* may be understood in terms of the level of social support available to members of the *Choudhary Jatt biradari*, a large *biradari* in the area in which the study was carried out. I have suggested that the social class and social status results are understandable in the context of two features of the particular experience of high social status amongst British Pakistani women. Firstly, there appears to be a relative lack of social support available to higher social status and higher

social class women in a geographical area in which few British Pakistanis are able to realise ambitions to being high status or to obtain high social class jobs. Secondly, British Pakistani women who have high social class occupations, or who perceive themselves to be of higher social status, may experience frustration due to the comparative lack of a recognisable status dividend in British life, which does not often provide the degree of respect or financial comfort which they may have expected. In this context, the continued experience of discrimination from the wider society becomes even more frustrating to women. I suggest that the results regarding acculturation may be understood either in terms of changing lifestyle and behavioural factors due to acculturation or in terms of the stress which may accompany a small degree of acculturation.

Women were asked to report any changes they had experienced which they believed were due to menopause in order to assess their symptom experience and illuminate whether or not their self-report would be restricted by 'cultural stereotypes' as suggested in the literature. A wide range of menopausal symptoms were reported, most of which are not on standard symptom checklists, indicating that reporting was not hindered by restrictive stereotypes. Women were also asked to give an opinion as to whether experiences listed on a standard checklist known as the 'everyday complaints' checklist (e.g. hot flushes, weight gain, headaches) were likely to be related to menopause in order to test whether women agreed with the division inherent in the checklist between 'true' symptoms of menopause and 'everyday complaints'. Women's beliefs about which experiences were likely to be due to menopause did not correspond to those of the checklist developers. Attribution of symptoms to menopause was associated with menopausal status, age, and migration status. It was clear that women interpreted some items from the standard checklist in ways other than intended by the checklist's authors based on their own understandings of menopause but, due to the use of a more open-ended approach, this produced useful data which are backed up by previous research. British Pakistani women's understandings and perceptions of menopause were found to be intimately linked to their understandings of sexuality, menstruation, ageing, notions of purity and modesty and the history of tensions between British Pakistanis and the wider society.

Overall, the results point to possible impacts of social support and stresses related to being part of a minority ethnic community on the way in which British Pakistani women perceive their bodies in terms of its reproductive and sexual potential, on the pace at which their reproductive systems age, and on how they physically experience the menopause transition.



There are three important conclusions of this research. First, a biosocial approach that uses both quantitative and qualitative methods can help to illuminate potential mechanisms which are consistent with local understandings as well as human biology. Second, that the timing and experience of menopause may be influenced by non-material aspects of social context, such as social support and frustrations about social status. This has interesting evolutionary implications which may fit the Adaptive Onset Hypothesis. Third, and finally, the understandings of the menopause transition prevalent among particular groups of non-western women may indicate new directions for research by helping us understand biological changes due to menopause. These biological changes may in turn have a relationship with other aspects of human variation, such as population-specific patterns of chronic disease risk.

# APPENDIX ONE - MENOPAUSE, SOCIODEMOGRAPHICS AND HEALTH QUESTIONNAIRE

1a. Do you know your exact date of birth? Yes ☐ No ☐

1b. Please tell me your date of birth or any part of it that you know:

Day \_\_\_\_\_ Month \_\_\_\_\_ Year \_\_\_\_\_

1c. If no to 1a, were you born before, on/during or after one of these events?

<u>Events</u>	<u>Before</u>	<u>During/On</u>	<u>After</u>	<u>Don't know</u>
British period (up to 1947)				
The Famine of 1943				
India-Pakistan Partition at 1947				
Md Ali Jinnah regime (1947-1948)				
Deaths of Jinnah and Gandhi 1948				
Abolition of Zamindari system 1950				
Liaquat Ali Khan Assassination 1951				
Bengali Language debate 1952				
Martial Law in Lahore and PM Khawaja Nazimuddin deposed 1953				
Election of East Bengal provincial assembly 1954				
Iskandar Mirza Regime (1956-1958)				
Martial Law 1958				
Ayub Khan regime (1958-1968/9)				
Cyclone of 1960				
Cyclone of 1961				
Cyclone of 1963 and Death of Suhrawardy				
Indo-Pak War 1965				
Tashkent Declaration and cyclone 1966				
Death of Fatima Jinnah 1967				
Flood and violent student demonstrations in Rawalpindi 1968				
Martial Law under Yahya Khan (1969-1971)				
Cyclone and Tidal wave of 1970				
1971 War (East Pak and India)				

2. Where were you born?

City/Town/Village \_\_\_\_\_ State/County \_\_\_\_\_ Country \_\_\_\_\_

3. Where was your mother born?

The same place as I was born

Yes ☐

No ☐



3b. City/Town/Village \_\_\_\_\_ State/County \_\_\_\_\_ Country \_\_\_\_\_

**4. Where was your father born?**

The same place as I was born

Yes ☐

No ☐



3b. City/Town/Village\_\_\_\_\_ State/County\_\_\_\_\_ Country\_\_\_\_\_

**5a. How old was your mother when you were born? Or, if she is alive, how old is she now?**

\_\_\_\_\_ years then OR \_\_\_\_\_ years now OR Don't know ☐



**5b. Compared to mothers of other people your age was she**

Younger

☐

The same age

☐

Older

☐

Don't know

☐

**6. How many brothers and sisters do you have?**

\_\_\_\_\_

**6b. How many of your brothers and sisters are older than you?**

\_\_\_\_\_

**7. When you were a child, were you**

Larger

☐

The same size

☐

Smaller

☐

than your same age peers

**8. When you were a teenager, were you**

Larger

☐

The same size

☐

Smaller

☐

than your same age peers

**9a. How old were you when you had your first menstrual period (menarche)?**

\_\_\_\_\_ years OR Don't know ☐



**9b. Compared to girls the same age was your menarche**

Earlier

☐

The same time

☐

Later

☐

Don't know

☐

**10a. How old were you when you moved to the UK?**

Born in the UK ☐ OR \_\_\_\_\_ years OR Don't know ☐



**10b. Were you**

a baby

☐

a child

☐

a teenager

☐

an adult

☐

**11a. What is your marital status?**

Married

☐

Widowed

☐

Divorced/Separated

☐

Never Married

☐

**11b. If Married, Divorced or Widowed, how old were you when you got married OR what year was it?**

\_\_\_\_\_ years OR 19\_\_\_\_\_

**11c. Where was your husband/ex-husband born?**

City/Town/Village\_\_\_\_\_ State/County\_\_\_\_\_ Country\_\_\_\_\_

**11d. Are you related to your husband/ex-husband in any way?**

No ☐

Yes, His Father is my *chacha* or *taya* (Father's brother) ☐

Yes, His Father is my *mamou* (Mother's brother) ☐

Yes, His Mother is my *khala* (Mother's sister) ☐

Yes, His Mother is my *poupi* (Father's sister) ☐

Yes, \_\_\_\_\_ (explain relationship) ☐

**12. What is the name of your caste/*biradari*/*zat/jati*?**

\_\_\_\_\_

**13. What is the name of your husband/ex-husband's caste/*biradari*/*zat/jati*?**

\_\_\_\_\_

**14a. What is the highest level of education that you have received?**

Professional training/college

☐

University

☐

High School

☐

Primary School

☐

**14b. What is the highest level of education that your husband/ex-husband has received?**

Professional training/college

☐

University

☐

High School

☐

Primary School

☐

**15a. Have you ever worked outside your home?**

No ☐

Yes ☐



**15b. What job do you have now OR what was your last job?**

\_\_\_\_\_

**15c. How long did you work/have you worked outside your home?**

\_\_\_\_\_

**16a. Does/Did your husband/ex-husband work?**

No ☐

Yes ☐



**16b. What is/was his job?**

\_\_\_\_\_

**16c. What is the reason that he does/did not work?**

Retired

☐

Poor health

☐

No work permit

☐

Cannot find a job right now

☐

Other

☐

\_\_\_\_\_

**17a. Have you ever used any tobacco products** (check all that apply)

No ☐

cigarettes ☐

Huqqa/shisha ☐

chillum ☐

*bidis* (tobacco in *tendu*) ☐

tobacco chewing/*tambaku paan/gutka* ☐

Other ☐

\_\_\_\_\_

**17b. Do you use this product/these products now?**

Yes ☐

No ☐

**18. Does anyone in your family smoke tobacco inside the house?**

Yes ☐

No ☐

**19a. Have you ever been pregnant?**

No ☐

Yes ☐



**19b. How many times have you been pregnant?**

\_\_\_\_\_ times

**19c. Did all these pregnancies result in births?**

Yes ☐

No ☐

**19d. How many pregnancies did not result in births?**

\_\_\_\_\_

**19e. If there was at least one surviving child according to 19c & d, when was your first child born?**

\_\_\_\_\_ (calendar year)

OR

when I was \_\_\_\_\_ years old

**19f. If there was at least one surviving child, did you ever breastfeed your child/ any of your children?**

No, none of them ☐

Yes, all of them ☐ Yes, but only \_\_\_\_\_ of them ☐

**19g. How long did you breastfeed each child?**

1<sup>st</sup> child who was breastfed \_\_\_\_\_ months

2<sup>nd</sup> child who was breastfed \_\_\_\_\_ months

3<sup>rd</sup> child who was breastfed \_\_\_\_\_ months

4<sup>th</sup> child who was breastfed \_\_\_\_\_ months

5<sup>th</sup> child who was breastfed \_\_\_\_\_ months

6<sup>th</sup> child who was breastfed \_\_\_\_\_ months

(Write any subsequent breastfed children to the left )

**20a. Do you do light physical activity**

(walking at a slow pace for at least 10 minutes, light cleaning (dusting) or weeding the garden, etc)

Less than once a week ☐

Once a week ☐

2-3 times per week ☐

4-5 times per week ☐

About every day ☐

**20b. Do you do moderate physical activity**

(walking at a faster pace for at least 10 minutes, heavier cleaning (washing clothes by hand) or digging in the garden, swimming, a moderate gym workout etc.)...

Less than once a week ☐

Once a week ☐

2-3 times per week ☐

4-5 times per week ☐

About every day ☐

**20c. Do you do vigorous physical activity...**

(activities that leave you out of breath or sweaty like running, sports, or an active gym workout)

Less than once a week ☐

Once a week ☐

2-3 times per week ☐

4-5 times per week ☐

About every day ☐

**The following questions are very important to our study; please think carefully about each question.**

**21. Have you had a menstrual period in the last 12 months?**

Yes ☐

No ☐



**21b. What age were you when you had your last period? (or when was it?)**

\_\_\_\_\_ years old OR Calendar year \_\_\_\_\_

**21c. Have you been pregnant or breastfeeding in the last 12 months?**

Yes ☐

No ☐

**21c. Have you had a period every month in the last 12 months?**

Yes ☐

No ☐

**21d. Did your periods occur monthly from the ages of 20-35 (when you were not pregnant or breastfeeding)?**

Yes ☐

No ☐

**21e. Have you ever had surgery to removed your uterus and/or ovaries? (check all that apply)**

No ☐

Yes, one ovary ☐

Yes, both ovaries ☐

Yes, uterus ☐

**22. Have you ever taken hormones (HRT or other kinds) or birth control pills, shots, or implants?**

No ☐

Yes ☐



**22b. When did you take them and what kind were they?**

(type=estrogen, combined estrogen and progesterone, or progesterone)

1. Drug name or Type \_\_\_\_\_ Pill ☐ Injection ☐ Implant ☐

Age/year started \_\_\_\_\_ Age/year stopped \_\_\_\_\_ Reason stopped \_\_\_\_\_

2. Drug name or Type \_\_\_\_\_ Pill ☐ Injection ☐ Implant ☐

Age/year started \_\_\_\_\_ Age/year stopped \_\_\_\_\_ Reason stopped \_\_\_\_\_

3. Drug name or Type \_\_\_\_\_ Pill ☐ Injection ☐ Implant ☐

Age/year started \_\_\_\_\_ Age/year stopped \_\_\_\_\_ Reason stopped \_\_\_\_\_

4. Drug name or Type \_\_\_\_\_ Pill ☐ Shot ☐ Implant ☐

Age/year started \_\_\_\_\_ Age/year stopped \_\_\_\_\_ Reason stopped \_\_\_\_\_

(continue on back if necessary)

**23. Would you say your health in general is**

excellent

very good

good

fair

poor

☐☐☐☐☐

**Think of this ladder as representing where people stand in their communities.**

People define community in different ways; please define it in whatever way is most meaningful to you. At the **top** of the ladder are the people who have the highest standing in their community. At the **bottom** are the people who have the lowest standing in their community.

**Where would you place yourself on this ladder?**

Please place a large “X” on the rung where you think you stand at this time in your life, relative to other people in your community.





**24a. Have you experienced any changes in yourself, your feelings, your body that associate with menopause/reproductive ageing?**

No ☐

Yes ☐

**24b. What are these changes?**

(Show images of 5 glasses with water and explain what each one means, Continue on back of sheet for more symptoms if necessary)

1. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

2. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

3. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

4. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

5. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

6. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

7. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

8. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

9. \_\_\_\_\_

Is this change a big change? OR Is this problem severe?

Not at all

A little bit

Moderately

Quite a bit

Very

☐☐☐☐☐

**24c. Have you spoken to a doctor about any of these?**

No ☐

Yes, some of them ☐

Yes, all of them ☐

**26. I will read out a list of things some women have experienced and would you tell me whether you think women could experience them because of menopause?**

<u>Symptom</u>	<u>Yes</u>	<u>No</u>	<u>I don't know</u>
Dizzy spells			
Lack of energy			
Diarrhea-constipation			
Persistent cough			
Depression			
Backaches			
Upset stomach			
Headaches-migraines			
Cold sweats			
Aches or stiff joints			
Shortness of breath at rest			
Tingling in hands or feet			
Sore throat			
Trouble sleeping			
Chest pain on exertion			
Loss of appetite			
Swelling of body parts			
Difficulty concentrating			
Shortness of breath on exertion			
Nervous tension			
Urine control problems			
Bladder infection problems			
Discomfort on passing urine			
Rapid heart beat			
Hot flushes			
Night sweats			
Vaginal dryness			
Vaginal discharge			
Dry eyes			
Dry nose or mouth			
Weight gain or loss (>3 kg)			
Skin irritation (crawling or dryness)			
Breast soreness/tenderness			
Memory loss			

**26a. Have you ever had a mammogram (special breast x-ray test)?**

No ☐

Yes ☐



**26b. How many times?**

Once

2-3 times

4-5 times

More than 5 times

Don't know

☐☐☐☐☐

**27a. Have you ever had a cervical smear test (a.k.a. Papanicolaou or 'pap' smear test)?**

No ☐

Yes ☐



**27b. How many times?**

Once

2-3 times

4-5 times

More than 5 times

Don't know

☐☐☐☐☐

**28a. Have you been diagnosed with any chronic health conditions (i.e. diabetes, high blood pressure, osteoporosis)?**

No ☐

Yes ☐



**28b. Please list them**


**\*\*Next Pages include Pakistan Anxiety and Depression Scale and SL-ASIA\*\***

---

Thank you very, very much for your participation! The next part is where we measure you.

---

## Anthropometrics

Height \_\_\_\_\_ cm

Weight \_\_\_\_\_ kg

Waist Circumference \_\_\_\_\_ cm

Sitting Height \_\_\_\_\_ cm

### Skinfolds:

Mid-Upper Arm Circumference \_\_\_\_\_ cm

Triceps skinfold \_\_\_\_\_

Sub-scapular skinfold \_\_\_\_\_

### Bodystat Output:

Body fat % \_\_\_\_\_

Body water % \_\_\_\_\_

Lean body mass \_\_\_\_\_

BMR \_\_\_\_\_

## APPENDIX TWO - SUINN-LEW ASIAN SELF-IDENTITY ACCULTURATION SCALE (SL-ASIA)

Adapted from: Suinn, R. M., C. Ahuna, and G. Khoo. 1992. The Suinn-Lew Asian Self-Identity Acculturation Scale: Concurrent and Factorial Validation. *Educational and Psychological Measurement* 52:1041-1046.

INSTRUCTIONS (To Read Aloud): The questions which follow are for the purpose of collecting information about your historical background as well as more recent behaviors which may be related to your cultural identity. Choose the one answer which best describes you.

1. What languages can you speak?
  1. Asian only (for example, Punjabi, Urdu, Potohari, Hindko, Pashto etc.)
  2. Mostly Asian, some English
  3. Asian and English about equally well (bilingual)
  4. Mostly English, some Asian
  5. Only English
2. What language do you prefer?
  1. Asian only
  2. Mostly Asian, some English
  3. Asian and English about equally well (bilingual)
  4. Mostly English, some Asian
  5. Only English
3. How do you identify yourself?
  1. South Asian
  2. Pakistani
  3. British Asian
  4. British Pakistani
  5. British or English
4. Which identification does (did) your mother use?
  1. South Asian
  2. Pakistani
  3. British Asian
  4. British Pakistani
  5. British or English
5. Which identification does (did) your father use?
  1. South Asian
  2. Pakistani
  3. British Asian
  4. British Pakistani
  5. British or English
6. What was the ethnic origin of the friends and peers you had, as a child up to age 6?
  1. Almost exclusively Pakistanis, South Asians, British Asians
  2. Mostly Pakistanis, South Asians, British Asians
  3. About equally Asian groups and British groups
  4. Mostly British people, Afro-Caribbeans or other non-Asian ethnic groups
  5. Almost exclusively British people, Afro-Caribbeans or other non-Asian ethnic groups
7. What was the ethnic origin of the friends and peers you had, as a child from 6 to 18?
  1. Almost exclusively Pakistanis, South Asians, British Asians
  2. Mostly Pakistanis, South Asians, British Asians
  3. About equally Asian groups and British groups
  4. Mostly British people, Afro-Caribbeans or other non-Asian ethnic groups
  5. Almost exclusively British people, Afro-Caribbeans or other non-Asian ethnic groups

**8. Whom do you now associate with in the community?**

1. Almost exclusively Pakistanis, South Asians, British Asians
2. Mostly Pakistanis, South Asians, British Asians
3. About equally Asian groups and British groups
4. Mostly British people, Afro-Caribbeans or other non-Asian ethnic groups
5. Almost British people, Afro-Caribbeans or other non-Asian ethnic groups

**9. If you could pick, whom would you prefer to associate with in the community?**

1. Almost exclusively Pakistanis, South Asians, British Asians
2. Mostly Pakistanis, South Asians, British Asians
3. About equally Asian groups and British groups
4. Mostly British people, Afro-Caribbeans or other non-Asian ethnic groups
5. Almost British people, Afro-Caribbeans or other non-Asian ethnic groups

**10. What is your music preference?**

1. Only Asian music (for example, Pakistani, Indian)
2. Mostly Asian
3. Equally Asian and English
4. Mostly English
5. English only

**11. What is your movie preference?**

1. Asian-language movies only
2. Asian-language movies mostly
3. Equally Asian/English English-language movies
4. Mostly English-language movies only
5. English-language movies only

**12. What generation are you?**

- 1 1st Generation = I was born in Asia or country other than the UK
- 2 2nd Generation = I was born in the UK., either parent was born in Asia or country other than the UK
- 3 3rd Generation = I was born in the UK., both parents were born in the UK, and all grandparents born in Asia or country other than the UK
- 4 4th Generation = I was born in the UK., both parents were born in the UK, and at least one grandparent born in Asia or country other than the UK and one grandparent born in the UK.
- 5 5th Generation = I was born in the UK., both parents were born in the UK., and all grandparents also born in the UK.
- 6 Don't know what generation best fits since I lack some information.

**13. Where were you raised?**

1. In Asia only
2. Mostly in Asia, some in the UK.
3. Equally in Asia and the UK
4. Mostly in the UK, some in Asia
5. In the UK Only

**14. What contact have you had with Asia?**

1. Raised one year or more in Asia
2. Lived for less than one year in Asia
3. Occasional visits to Asia
4. Occasional communications (letters, phone calls, etc.) with people in Asia
5. No exposure or communications with people in Asia

**15. What is your food preference at home?**

1. Exclusively Asian food
2. Mostly Asian food, some British
3. About equally Asian and British
4. Mostly British food
5. Exclusively British food

16. What is your food preference in restaurants?

1. Exclusively Asian food
2. Mostly Asian food, some British
3. About equally Asian and British
4. Mostly British food
5. Exclusively British food

17. Do you

1. Read only an Asian language?
2. Read an Asian language better than English?
3. Read both Asian and English equally well?
4. Read English better than an Asian language?
5. Read only English?

18. Do you

1. Write only an Asian language?
2. Write an Asian language better than English?
3. Write both Asian and English equally well?
4. Write English better than an Asian language?
5. Write only English?

19. If you consider yourself a member of the Asian group (Pakistani, South Asian, British Asian., whatever term you prefer), how much pride do you have in this group?

1. Extremely proud
2. Moderately proud
3. Little pride
4. No pride but do not feel negative toward group
5. No pride but do feel negative toward group

20. How would you rate yourself?

1. Very Asian
2. Mostly Asian
3. Bicultural
4. Mostly Westernized
5. Very Westernized

21. Do you participate in traditional South Asian/Muslim occasions, holidays, traditions, etc.?

1. Nearly all
2. Most of them
3. Some of them
4. A few of them
5. None at all

22. Rate yourself on how much you believe in Asian values (e.g., about marriage, families, education, work):

1	2	3	4	5
(do not believe)				(strongly believe in Asian values)

23. Rate your self on how much you believe in British (Western) values:

1	2	3	4	5
(do not believe)				(strongly believe in Asian values)

24. Rate yourself on how well you fit when with other Asians of the same ethnicity:

1	2	3	4	5
(do not fit)				(fit very well)

25. Rate yourself on how well you fit when with other British people who are non-Asian (Westerners):

1	2	3	4	5
(do not fit)				(fit very well)

26. There are many different ways in which people think of themselves.  
Which ONE of the following most closely describes how you view yourself?

1. I consider myself basically an Asian person (e.g., Pakistani, South Asian, etc.). Even though I live and work in the UK, I still view myself basically as an Asian person.
2. I consider myself basically to be British. Even though I have an Asian background and characteristics, I still view myself basically as an British.
3. I consider myself as a British Asian, although deep down I always know I am an Asian.
4. I consider myself as a British Asian, although deep down, I view myself as British first.
5. I consider myself as a British Asian. I have both Asian and British characteristics, and I view myself as a blend of both.

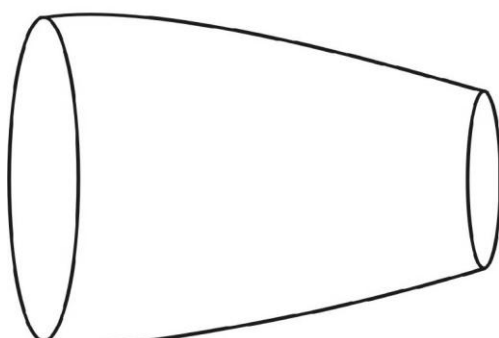
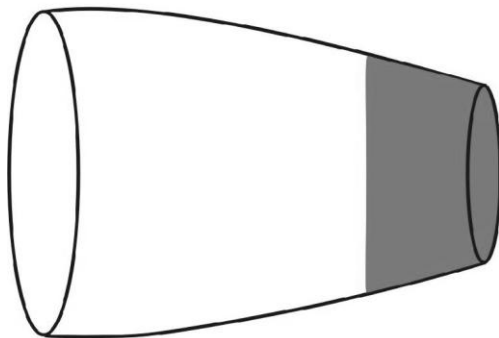
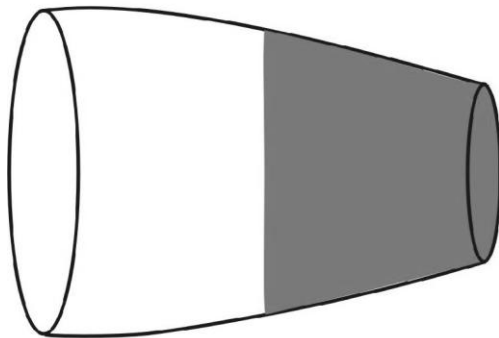
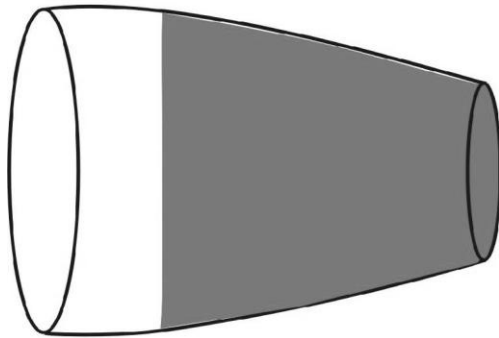
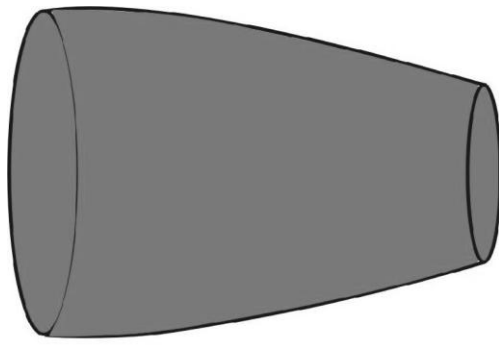


### APPENDIX THREE - PAKISTAN ANXIETY AND DEPRESSION SCALE

From: Mumford, D. B., M. Ayub, R. Karim, N. Izhar, A. Asif, and J. T. Bavington. 2005. Development and validation of a questionnaire for anxiety and depression in Pakistan. *Journal of Affective Disorders* 88 (2):175-182.

<i>AD scale</i>		
Do you think that you have some mental problems?	Yes	No
Do you feel anxious amongst a lot of people?	Yes	No
Is your mind in peace?	No	Yes
Do you worry over trivial things?	Yes	No
Has your tolerability decreased?	Yes	No
Does one idea come to your mind again and again?	Yes	No
Have you become more irritable?	Yes	No
Do you feel lazy?	Yes	No
Have you lost your self-confidence?	Yes	No
Do you get frightened?	Yes	No
Do you feel that your mind is not working?	Yes	No
Do you feel that you are being punished for something?	Yes	No
Do you sleep well at night?	No	Yes
Do you keep on thinking without any purpose all the time?	Yes	No
Do you feel that you do not understand anything?	Yes	No
<i>D scale</i>		
Are you happy these days?	No	Yes
Do you feel sad at heart?	Yes	No
Do you feel like working?	No	Yes
Do you enjoy this world?	No	Yes
Are you excessively hopeless?	Yes	No
Has your interest decreased?	Yes	No
Do you feel like staying in bed all day?	Yes	No
Do you enjoy your food?	No	Yes
Do you feel like crying?	Yes	No
Do you feel fed up with your family members?	Yes	No
Do you feel you have committed some serious sin?	Yes	No
Do you feel like running away from your home?	Yes	No
Are you fed up with life?	Yes	No
Do you have a wish to die?	Yes	No
Do you ever think that death would be better than this life?	Yes	No

#### APPENDIX FOUR: IMAGE OF FIVE GLASSES



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